THE IRON TRADE REVIEW

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NOT ALARMING

IS PROSPECT OF DECREASED ORE SHIPMENTS.

Large Sales of Finished Material.—More Interest in Pig Iron Market in the East, but Few Sales in the West.

The strike of dock laborers at the ports at the head of the lakes and of miners on the Mesabi and Vermillion ranges continues, and it is extremely difficult to predict what the outcome will be. Public sentiment on the ranges is decidedly against the miners, who are having trouble in getting credit from grocers, and it does not seem possible that the strike can last long. At the rate shipments were being made up to July 1, the amount for the year would have aggregated the immense total of 46,000,000 tons, or 5,000,000 tons in excess of the tonnage which will probably be needed to meet furnace requirements up to the time of the opening of navigation next year. Hence, if the strike does not result in a reduction of the estimated shipments by more than 5,000,000 tons, the result will not be serious, and indeed, the effect will, in some respects, be favorable. A month's idleness at the docks and mines would not be disastrous to the trade.

Structural Material

July ended with considerable increase in orders for finished material. The American Bridge Co. has contracted to furnish about 15,000 tons for the Portland and Seattle extensions of the Northern Pacific, and heavy orders for structural material have also been placed at Chicago. Contracts for fabricated material aggregating 5,000 tons have been made with a Pittsburg company, and a contract for 1,000 steel cars has been awarded a Davenport, Ia., car builder by the Burlington railroad. Plates and shapes have been ordered for two more lake vessels, making nine contracts of this kind in six weeks.

Railroad Purchases

Although the buying of steel rails is not general, contracts for 50,000 tons have been placed in Chicago. Railroads are showing more of a tendency to buy, and the market in track materials is stronger, especially in spikes and bolts.

Bar Iron Is Firm

Lower prices for scrap are having effect on bar iron, and the quotation of 1.60c Pittsburg has been shaded. The present tendency is toward firmness. One concern, which has been well known for its tendency to name low prices for bar iron, has been placed in the hands of a receiver.

Pig Iron Conditions

In the east a renewal of activity in foundry iron is noticeable and a considerable tonnage has been closed. In at least two instances, however, one involving about 6,000 tons for delivery through November, and the other 1,000 tons for August shipment, furnace interests made important concessions, and the iron netted less than $22 at the furnace. Manufacturing plants are extremely busy and the outlook for further buying is good. In the central west the pig iron markets are listless, although prices show little change. It is understood that the Corporation is willing to take from 10,000 to 15,000 tons of Bessemer pig iron at $22 valley furnace. There is a scarcity of Bessemer, but an ample supply of basic is obtainable.

Receiver Appointed.—Application for a receiver for the American Rolling Mill Corporation, Chicago and Muncie, Ind., was made before Judge Landis, in the United States district court, Chicago, Monday, July 29, and the American Trust and Savings bank, of that city, was appointed.

STRIKE CONTINUES,

BUT EFFORT TO BREAK IT WILL SOON BE MADE.

Not Popular With People of Minnesota and Damaging Business in Mining Towns.—Propositions to Arbitrate Not Favorably Considered.

(Special Telegram.)

Duluth, Minn., July 31.—To predict the outcome or even the happenings of the next few days from present condition in the strike situation, both at the docks and at the mines, is absolutely futile. A page of details might be written, but nothing indicating a probable result has happened.

Generally speaking, there are a great many more miners working today than at the end of last week. There are some men working in every shaft in the Hibbing district except the Sellers, Virginia, Eveleth and Mountain Iron mines, which are practically shut down and no attempt is being made to operate. At Nashwauk some of the men quit work, but all the mines are working. The Colerain district has scarcely been disturbed. The eastern end of the range is idle for the most part simply because ore cannot be shipped.

The consensus of opinion on the range is that the strike has been broken, but so long as the miners who wish to work are as susceptible to intimidation as they have been so far, a very small number of active strikers may continue to tie up a large number of men. The negative policy of the Steel Corporation has not given opportunity for any display of strength on the part of the strikers and there is no rioting, and since the sheriffs have placed the ban on public demonstrations, the strikers are little in evidence about the range towns. The mining properties are all picketed with armed guards, and the strikers are not allowed on them at all.

The officers of the Western Federation disavow any intent to intimidate or do violence. Intimidation has been

(Continued on page 169.)

THE WEEK IN IRON CENTERS

PITTSBURG

Good Demand For Sheets, Tin Plates and Pipe.—Pig Iron Dull.

Office of THE IRON TRADE REVIEW,
521 Park Bldg., July 31.

The market during the past week has been dull and listless, but in such shape that it would not take much to stir it out of the rut of routine into which it has fallen. While there is but very little going on, the situation is being closely watched and the general opinion seems to be that the next thirty days will see a revival and general stiffening up. The strike on the docks and in the mines at the head of the lakes is not being taken as seriously as it was a week ago and the impression prevails that it will be short-lived and that shipments will be resumed before the end of the week, if not fully, at least full enough to keep a fair sized fleet in operation.

The pig iron market is peculiar. There is a little inquiry stirring, but it is not general and prices are largely nominal. There is plenty of basic iron to be had, but the available supply of Bessemer unless it has been held in reserve by interests which have hitherto claimed to be fully sold up for the remainder of the year, is comparatively small. Some of the inquiry is only tentative and put out as a feeler. A few furnaces have had cancellations and requests for deferred shipments, this being brought about by the machinists' strike which has been on in this district, and on account of which consumers have been held back and their material accumulated until they do not care to pile up any more.

The Carnegie Steel Co., during the week has bought considerable steel, some of it in the east for the Pencoyd works of the corporation and some at Buffalo for Pittsburg operations, the total running to nearly 9,000 tons for the week. As far as can be learned the Carnegie company has not taken on any more scrap. Nothing definite can be learned as to a further negotiation for pig iron by the leading interest, but the matter is being considered in New York this week.

New business in the finished lines has continued to drop off with the exception of sheets, tin plate and pipe. Tin plate business has improved very materially during the past two weeks. The falling off of new business in the finished lines is not being felt in any direction, as mills have orders on their books, with specifications against a greater part of them, upon which shipments cannot be made inside of five to six months and in some instances large tonnages will, of necessity, have to be carried over into next year.

The conciliation board now in session at Cambridge Springs, Pa., is expected to complete the taking of evidence by Thursday or Friday of this week and make its report some time before August 10. The board has been in session over a week.

Pig Iron.—Report that the Steel Corporation is in the market for a large tonnage of Bessemer iron has not been entirely put down, and a representative of one of the largest producers is in New York this week on the matter. While no definite information is obtainable on the subject, it is understood the Corporation is willing to take from 10,000 to 15,000 tons of Bessemer pig iron for August delivery at $22 valley furnace. Since May merchant furnace operators have been announcing from time to time that they are out of the market for the remainder of the year, but as often since that time fair sized tonnages have been shaken loose at opportune times, while the high prices were ruling. The market at the present time is undeniably quiet, as it has been for the past month, but during the past two or three days more small inquiries have been out than has been the case for two weeks back. None of these are large, running from carload lots to 200 tons. We note the sale of 500 tons No. 2 northern foundry at $22.85 valley, but this cannot well be considered as an actual market price, inasmuch as the seller was forced to move the iron, and made a concession in order to do so. Northern foundry iron, No. 2 grade, is quoted $22.75 to $23, and gray forge iron $21.50 to $21.75 at the furnace. Bessemer iron for either prompt shipment or during the last half of the year is quoted $22.50 to $22.75 and basic iron at $22 furnace. Southern producers are quoting on the basis of $21 Birmingham for No. 2 for whatever grade they may have during this quarter, and $20 to $20.50 for last quarter. There is very little doing in southern pig iron for next year, although a little is moving at $18.50 Birmingham for the first half of 1908. There is considerable inquiry for this delivery and there are indications of a buying movement within the next 60 days. There is no inquiry at all on forward deliveries of northern iron. We note a sale of 200 tons northern gray forge at $21.50 valley furnace. For both prompt delivery and shipment during the remainder of the year, we quote as follows:

Bessemer, Valley	$22.75 to 23.00
Bessemer, Pittsburg	23.65 to 23.90
No. 1 Foundry, Pittsburg	23.75 to 24.00
No. 2 Foundry, Pittsburg	22.75 to 23.00
Gray Forge, Pittsburg	22.40 to 22.90
Basic, Valley	22.00 to 22.50
Basic, Pittsburg	22.90 to 23.40

Ferro-Manganese.—The market on ferro-manganese presents a very peculiar situation inasmuch as the price for selling is practically the same as buying prices abroad. On foreign 80 per cent, we quote $63.00 to $63.50 delivered Pittsburg in carload lots for August shipment, with but very little variation in price for forward delivery. There is little greater activity in ferro-silicon and consumers are covering for their last half and last quarter requirements. For the first time in nearly a year, domestic ferro-silicon is being shipped east and is now in active competition near seaboard points with the imported alloy.

Imported 50 per cent ferro-silicon is quoted $108 to $110 Pittsburg, domestic 12 per cent, $36; 11 per cent $35; 10 per cent, $34. The lower grades of imported ferro-silicon are quoted $1 lower. These quotations are applicable to Pittsburg territory.

Plates.—The Carnegie Steel Co. during the past week closed with the American Ship Building Co. for plates and shapes aggregating 3,200 tons for another lake freight steamer, making a total of 11 now under contract. Plate specifications are extremely heavy and considerable new contract business has been taken on both by the leading interest and independent manufacturers during the week under review. Delivery promises under new contracts are from five to eight months. The steel car builders have taken on several large-size contracts for railroad tonnage, and have added this to their mill specifications. Prices are unchanged and we quote as follows:

Tank plate, ¼-inch thick, 6¼ to 100 inches, 1.80c to 1.90c f. o. b. mill Pittsburg for prompt shipment, and 1.70c base Pittsburg on future deliveries. Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c. A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches, excepting straight taper plates varying not more than four inches in width at ends, narrowest

end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in width over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1.00c. Gages under ¼-inch to and including 3-16-inch plate on thin edges, 0.10c; under 3-16 to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—Market conditions are about the same as they were last week, and taken altogether are very satisfactory. The week under review will probably show an increase as far as new business and new specifications are concerned as compared with the previous week. Mills are still having difficulties in catching up on their galvanized and blue annealed contract obligations. We quote as follows:

Black steel sheets one pass, cold rolled, Nos. 11-12, 2.20c; Nos. 13-14, 2.25c; Nos. 15-16, 2.30c; Nos. 17-21, 2.35c; Nos. 22-24, 2.40c; Nos. 25-26, 2.45c; No. 27, 2.50c; No. 28, 2.60c; No. 29, 2.75c; No. 30, 2.85c; galvanized Nos 10-11, 2.65c; Nos. 12-14, 2.75c; Nos. 15-16, 2.85c; Nos. 17-21, 3.00c; Nos. 22-24, 3.15c; Nos. 25-26, 3.35c; No. 27, 3.55c No. 28, 3.75c; No. 29, 4.00c; No. 30, 4.25c; blue annealed, No. 10 and heavier, 1.85c; Nos. 11-12, 1.90c; Nos. 13-14, 1.95c; Nos. 15-16, 2.05c. Corrugated roofing, $1.90 per square for No. 28 painted, 2½-inch corrugation, and galvanized, $3.25 per square for No. 28.

Tin Plate.—Tin plate business is picking up right along, although in comparison with the abnormal business of the past nine months is still considerably below the average, but both new business and specifications show a decided improvement. Prices are unchanged, and we quote:

Coke tin plate 100-pound basis, 14 x 20, $3.90 f. o. b. mill, Pittsburg district. Terms, 30 days, less 2 per cent for cash in 10 days.

Rails and Track Material.—The leading local manufacturers report no sales of standard sections during the week under review, and the sales of light rails aggregate about 1,300 tons. The rail situation is still tied up pending a report by the joint committee appointed by railroads and rail makers to look into the subject. On the old specifications for 1907-08 deliveries we quote as follows:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; 8-pound, $40; 12-pound, $36 to $37; 16-pound, $35 to $36; 20-pound, $34 to $35; 25 to 45-pound, $33 to $34; angle splice bars for standard sections, $1.65; standard spikes for forward deliveries, $2.30 to $2.35 Pittsburg; hand spikes, $2.50 Pittsburg.

Hoops, Bands and Cotton Ties.—A little new buying is announced, but none of the large consumers have come into the market ready to contract for their year's requirements. Specifications are about equal to mill shipments. We quote as follows:

Hoops in carload lots, 2c; in less than carload lots, 2.10c; bands, 1.60c, base half extras as per standard steel. Cotton ties, 96½c per bundle.

Steel.—The Carnegie Steel Co. during the past week entered the market and closed for a large tonnage of semi-finished material and it is estimated the total will reach about 9,000 tons, of which 3,000 tons of Bessemer billets purchased from the Pennsylvania Steel Co. at $28.00, Steelton was shipped to the Pencoyd works of the corporation. We also note the sale of 1,500 tons of open-hearth billets at $30 eastern mill, and 1,000 tons at Bessemer at $30.80 delivered, or $29 mill. Producers of semi-finished material in the Pittsburg district report the supply inadequate to take care of their own contracts and finishing mills, and are buying elsewhere to supply the demands. We quote Bessemer billets $30.00 to $30.50 Pittsburg from Pittsburg mills, and $31.00 to $31.50 Pittsburg on open-hearth. Sheet bars are quoted nominally at $31.00 mill.

Merchant Bars.—New steel bar business has fallen off during the week as was expected, inasmuch as all the large buyers have covered for their requirements for the year. Specifications are overwhelmingly heavy and greatly exceed mill shipments. One of the large car companies has an inquiry in the market for 1,000 to 1,200 tons of iron bars and expects to close before the end of the week. Prices are very firm on contract and premiums are being asked for anything like prompt deliveries. The conciliation board meeting at Cambridge Springs, Pa., to adjust wage scale differences between the Amalgamated Association and the Republic Iron & Steel Co. and Western Bar Iron Association, expects to complete its work by Thursday or Friday of this week. We quote as follows:

Common iron bars, 1.75c to 1.80c Pittsburg in carload lots and over, 1.80c to 1.85c in less than carloads; 1.60c base Pittsburg, plus freight to point of shipment on western deliveries; Bessemer steel bars, 1.60c, net for future deliveries; 1.85c to 1.90c out of stock; plow and cultivator, 1.60c, net; channels, angles, zees, tees, under three inches, 1.70c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and ground shafting, 50 per cent off in less than carloads, delivered in base territory; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flats, 1.60c to 1.65c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.10c to 2.15c. The price of planished and machine straightened tire is 1.80c, base, half tire extras. Iron finished tire up to 1½ inch and over to be sold on regular bar basis of 1.60c base, half extras, steel card.

Structural Material.—From a mill standpoint the market on shapes and universal plates is in very satisfactory condition and the volume of new business has been good. Specifications are coming in in good shape and several fair tonnages are in sight and are expected to be placed within a short time. Fabricating shops are busy, with a good inquiry being received, and while no large jobs have been taken on, the number of small contracts have been enouraging. The contract specifications of the American Bridge Co. during the week were heavier than they have been for some time past. We quote:

Beams and channels, 15-inch, and under, 1.70c; over 15 inches, 1.80c; zees, 1.70c; tees 1.70c; angles from three to six inches inclusive, 1.70c; over six inches, 1.80c; universal and sheared plates, 6¼ inches and wider, 1.80c base.

Wire and Wire Nails.—Wire products continue to be in as much demand at the present time as they were two months ago, notwithstanding the fact that July and August are usually very quiet periods. Mills on account of the seasonable lull are catching up about two weeks to a month on their deliveries, and by the time the fall rush begins the mills expect to be within one month of contract obligations. From the urgent requests for shipment by large consumers, as well as jobbers, it is apparent that the stocks of the latter all over the country are exceedingly light, and that the pressure upon them for deliveries is so heavy that they cannot accumulate stocks. Prices are unchanged, and we quote as follows:

Wire nails, jobbers' carload lots, $2; retailers' carload lots, $2.05; less than carloads, $2.10; painted barb wire, $2.15, for jobbers in carloads; retailers in carloads, $2.20; and less than carload, $2.30, with 30c for galvanizing;

plain wire, $1.85 for jobbers, and $1.90 by carload.

Merchant Pipe.—The pipe market is in a very healthy condition and the outlook is getting better every day. Delivery promises are from five to six months as compared with promises of from three to five weeks at this time last year. Specifications have fallen off to some extent during the past week, but not enough to cause any uneasiness. Inquiries for about 150 miles of eight to 16-inch pipe are floating around, but as far as can be learned have not been placed, mills not caring to take on the business with the delivery requirements attached. We quote the following official discounts to consumers in large lots subject to one point and five to jobbers:

	—Steel— Black.	Galv.
⅛ and ¼ inch	65	49
⅜ inch	67	53
½ inch	69	57
¾ to 6 inches	73	63
7 to 12 inches	70	55
EXTRA STRONG PLAIN ENDS.		
⅛ to ⅜ inch	58	46
½ to 4 inches	65	53
4½ to 8 inches	61	49
DOUBLE EXTRA STRONG PLAIN ENDS.		
½ to 8 inches	54	43

Iron Pipe.—Local manufacturers have been refusing to take on new business except to meet the demands of old customers, and then are making no definite delivery promises. We continue to quote:

RANDOM LENGTHS WITH THREADS AND COUPLINGS—CARLOAD LOTS.	Black.	Galv.
⅛, ¼ and ⅜ inch	59	43
½ inch	62	51
¾ and 6 inch	67	57
7 and 8 inch	62	46
PLUGGED AND REAMED.		
1 to 4 inch	65	55
EXTRA STRONG PLAIN ENDS.		
⅛, ¼ and ⅜ inch	52	40
½ to 4 inch, inc	59	47
4½ to 8 inch	55	42
DOUBLE EXTRA HEAVY PLAIN ENDS.		
½ to 3 inch, inc	48	37

Boiler Tubes.—The heavy buyers of boiler tubes have closed for their last half requirements, and specifications against them have been up to the heavy average of the past few months. Conditions and prices are unchanged and we quote:

	Iron.	Steel.
1 to 1½ inch	42	47
1¾ to 2¼ inch	42	59
2½ inch	47	61
2¾ to 5 inch	52	65
6 to 13 inch	42	59

2¼ inches and smaller, over 18 feet, 10 per cent net extra.
2¾ inches and larger, over 22 feet, 10 per cent net extra.

Coke.—The coke situation is firmer this week than it has been for some time. This is not really due to any increased demand, although the inquiry has improved. On account of the shortage of production in the coke region, a few of the operators are short on contracts, this having the affect of putting out very little spot coke on the market. Prompt furnace coke is quoted at $2.50 to $2.60, and although no contract sales have been made, the price quoted is $2.60 to $2.70. Due to the shortage of production, foundry coke is very firm and for spot shipment $3.10 to $3.25 is quoted and on contract $3.15 to $3.30.

Old Material.—The scrap market is as near dead as is possible and still have anything moving at all. The leading consumers are out of the market, with the exception of the Carnegie Steel Co., which comes in from time to time, and are expected to be so until about Sept. 1. Prices are nominal all along the line, and we quote as follows, gross tons, delivered in the Pittsburg district:

Heavy melting scrap $18 to $18.50; re-rolling rails, $18.50 to $18.75; bundled sheet scrap, $15.50 to $16; iron axles, $30.50 to $31; old iron rails, $23 to $24; No. 1 wrought scrap, $18 to $18.25; old car wheels, $24 to $24.50; low phosphorus scrap, $23 to $23.50; machine shop turnings, $15 to $15.50; axle turnings, $15.50 to $15.75; cast borings, $13 to $13.50; No. 1 cast scrap, $20.25 to $20.75.

CHICAGO.

Considerable Activity in Finished Lines—Pig Iron is Dull.

Office of THE IRON TRADE REVIEW,
1362 Monadnock Block, July 23.

For a midsummer market there is considerable activity in the local field. During the week a purchase of 7,000 tons of structural shapes was made by a local jobber; the steel for the construction of two more boats was placed with the Carnegie Steel Co., amounting to nearly 8,000 tons; contracts for fabricated material, aggregating 5,000 tons, were placed with a Pittsburg concern, and a contract for the construction of 1,000 all-steel cars was let to a Davenport (Iowa) car builder by the Burlington railroad. The latter will require substantially 20,000 tons of structural shapes, plates and castings, of which 12,500 tons will be rolled material. In addition, rail purchases were made aggregating 50,000 tons, and inquiries are pending for 15,000 tons of billets, 5,000 tons of basic pig, and for 3,000 tons of riveted pipe, besides a round tonnage of steam and traction rails. The purchase of steel bars, merchant pipe, boiler tubes, and sheets also continues extraordinarily active. One seller of soft steel reports contracts in the week under review aggregating 19,500 tons, while another large interest states its sales in the same period were considerably in excess of its capacity. Premiums for prompt shipment of blue annealed sheets have been secured during the week by independent makers owing to the slow movement of this material from Corporation mills, and premiums are offered for quick delivery of tubular goods. The slump in scrap has affected bar iron, and the quotation of 1.60c Pittsburg is not so rigidly adhered to as formerly. Pig iron continues soft, with prices on a level lower than that of a week ago. There is a stronger tone in spikes and track bolts since railroads commenced more actively to specify against contracts, and there is also a better demand for structural steel from mill and warehouse stocks. Fabricators state that there is a greater number of small buildings under consideration than at any other time this year, while the tonnage involved in large enterprises runs into big figures.

Pig Iron.—Very little interest in pig iron is shown by western foundrymen. A surface view would characterize the market as an extremely dull one. The only important inquiry before producers is for 5,000 tons of basic for a local steel concern, and this is considered more of a "feeler" than a bona fide want. The largest transaction of the week was for 1,500 tons of malleable for the first quarter of the new year, which was closed at a little less than $22 Chicago. Purchases continue largely of the carload order, with scattering lots running from 100 to 300 tons. The market seems slightly weaker on all deliveries, and it has developed that 1908 wants can be placed on the basis of $18 Birmingham for No. 2, which is 50 cents less than the nominal price. The $21 schedule is asked only on nearby deliveries; for the tip end of the current quarter, $20.50 Birmingham can be done. For the fourth quarter there is no change from the $20 price which has been asked for several weeks, although a lower price can be obtained for this delivery provided a portion of the tonnage extends into the new year. On northern iron, the range of prices for the remaining five months of the year is from $24.50 to $25.00 South Chicago furnace, the tonnage and delivery required determining the quotation. The strike on the ore ranges has injected a strengthening element into the pig iron situation, and a protracted suspension of operations in that locality may veer the present course of the market. We quote as follows, the maximum prices on southern iron being for third quarter, and the minimum for fourth quarter:

Lake Superior Charcoal	$27.00 to 27.25
Northern Foundry No. 1	25.00 to 25.50
Northern Foundry No. 2	24.50 to 25.00
Northern Foundry No. 3	24.00 to 24.50
Southern Foundry No. 1	24.85 to 25.85

Southern Foundry No. 2	24.35 to 25.35
Southern Foundry No. 3	23.85 to 24.85
Southern Foundry No. 4	22.85 to 23.35
Southern No. 1 Soft	24.85 to 25.85
Southern No. 2 Soft	24.35 to 25.35
Southern Gray Forge	21.85 to 22.35
Southern Mottled	21.35 to 21.85
Southern Silveries, 4 per cent silicon	25.85 to 27.35
Southern Silveries, 5 per cent silicon	26.85 to 28.35
Southern Silveries, 6 per cent silicon	27.85 to 29.85
Jackson Co. Silveries, 6 per cent	29.40 to 29.90
Jackson Co. Silveries, 8 per cent	30.40 to 30.90
Jackson Co. Silveries, 10 per cent	31.40 to 31.90
Malleable Bessemer	25.00 to 25.50

Billets and Rods.—The principal transaction before the local market is an inquiry for 15,000 tons of rolling billets. The bids received indicate a slight irregularity in prices. Prompt shipment of intermediate steel is more freely offered by outside mills, but the Steel Corporation continues a delinquent shipper. There is a fair demand for forging billets, local mills quoting from $36 to $38, Chicago, according to tonnage and delivery required. Bessemer rolling billets are offered at $30, Pittsburg, and wire rods at $37 for Bessemer and $38 for open-hearth, Pittsburg.

Merchant Bars.—The passing of the American Rolling Mill Corporation into the hands of a receiver, is the most interesting development of the past week. Pending an examination of the affairs of the company, the Muncie mill has been shut down and construction work at the new Chicago mill has been suspended. Little inquiry has developed for bar iron during the week. Competition is keen, and the nominal quotation of 1.60c Pittsburg is being shaded. New tonnage and specifications for steel bars are of healthy volume. In some cases, the current orders exceed the capacity of the mill receiving same. Most of the new business is coming from windmill and kindred manufacturing lines. We quote carload lots, Chicago delivery, as follows:

Bar iron, 1.73c to 1.78c; soft steel bars and bands, 1.78c half extras; soft steel angles, less than 3 x 3, 1.88c; hoops, 2.18c base, full extras; planished or smooth finished tire steel, 1.98c; iron finish, up to 1½ x ½ inch, 1.93c base; iron finish, 1½ x 1¼ inch and larger, 1.78c base; channels for solid rubber tire ¾ to 1 inch, 2.28c, and 1⅛ inch and larger, 2.18c; smooth finished machinery steel, 2.18c; flat sleigh shoe, 1.83c; concave and convex sleigh shoe, 2.08c; cutter shoe, 2.36½; toe calk steel, 2.33c; railway spring, 1.98c; crucible tool steel, 7c to 9c, with higher prices asked on special grades. Quotations on shafting are irregular, 50 and 10 per cent off the list being offered on carload business. On iron and steel bars from local stocks, we quote as follows: Bar iron, 2.25c full extras; soft steel rounds, and square, 3-inch and larger, $2 per 100 base; flats, 2 inches to 4 inches by ⅛ inch and larger, $2 per 100 pounds base; 4½ inches by 5 inches and 6 inches by 5-16 inch and thicker, $2 per 100 pounds base; all ovals, half rounds, $2 per 100 pounds base; steel bands, $2 half extras; soft steel hoops, $2.50 full extras. Other sizes not mentioned above, $2 per 100 pounds base plus half extras.

Plates.—Contracts for two more boats have been let to the American Ship Building Co., which in turn has ordered the steel tonnage for same from the Corporation. The latter now has orders on its books for the material for nine boats. The Bettendorf Axle Co., Davenport, has received the contract from the Burlington for the construction of 1,000 all- steel cars, of special design, in which pressed corrugated plates will be largely used. The only inquiry of notable dimensions involves a riveted pipe line for Morrison, Colo., the fabrication of which will require about 3,000 tons of plates. Mill tonnage and specifications are good, the best delivery obtainable being about two months. Prices are without change as follows:

Plates, ¼ inch and heavier, 6¼ to 100 inches wide, either universal or sheared, 1.70c to 2c Pittsburg base. For extras see Pittsburg report. Freight rate to Chicago, 18c per 100 pounds for carload lots. Jobbers' prices for shipment from local stocks are as follows: Tank steel, ¼ inch and heavier up to 72 inches wide, 2.20c; 3-16 inch up to and including 60 inches wide, 2.30c; 3-16 inch, 72 inches wide, 2.55c; No. 8 up to 60 inches wide, 2.50c. Flange steel, 25c extra; heads, 25c extra.

Sheets.—Current business is of exceedingly good volume. The slow deliveries of blue annealed sheets by the American Steel & Tin Plate Co. have strengthened these gages, and manufacturers in position to ship promptly are able to get small premiums. Jobbers report an excellent movement of material from stock, but are handicapped by the difficulty to maintain a full line of sizes. Prices are without change as follows:

Black sheets, Nos. 8, 9 and 10, 1.90c Pittsburg; No. 28, 2.60c Pittsburg. Galvanized sheets, No. 28, 3.75c Pittsburg. Freight to Chicago, 18c per 100 pounds for carload lots, and 20c for less than carload lots. Jobbers' prices on carload lots and less from store are as follows:

No. 10, 2.50c to 2.55c; No. 12, 2.55c to 2.60c; No. 14, 2.60c to 2.65c; No. 16, 2.70c to 2.80c; Nos 18-20, 2.80c to 2.90c; Nos. 22-24, 2.85c to 2.95c; No. 26, 2.90c to 3c; No. 27, 2.95c to 3.05c; No. 28, 3.05c to 3.15c; No. 30, 3.35c to 3.45c. Galvanized sheets, No. 10 to 20, 3.50c to 3.55c; Nos. 22 and 24, 3.65c to 3.75c; No. 26, 3.85c to 3.90c; No. 27, 4.05c to 4.15c; No. 28, 4.25c to 4.35c; No. 30, 5.40c to 5.45c.

Structural Steel.—The new tonnage and specifications placed with mills in the last two weeks are said to exceed the figures of any other two weeks since the first of the year. The principal contract was for 7,000 tons from a local jobber. Fabricators also report a sharp demand for material to go into small buildings. The latter inquiry is one of the notable features of current conditions, indicating considerable activity in the construction of dwellings, factories and small enterprises. The McClintic-Marshall Construction Co. is reported to have been awarded a contract for 3,000 tons of steel shapes for the new shops of the St. Louis & San Francisco to be erected at Springfield, Mo.; also for 2,000 tons of bridge material for the Western Pacific railway. We quote as follows:

Beams and channels, 3 to 15 inches inclusive, 1.70c Pittsburg. For extras see Pittsburg report. Freight rate from Pittsburg to Chicago, 18c per 100 pounds for carload lots, and 20c per 100 pounds for less than carload lots. Quotations from store are as follows:

All angles, three inches and larger, including six inches, $2.10 per 100 pounds; angles, over six inches, $2.15 per 100 pounds base; beams, 3 to 15 inches inclusive, $2.10 per 100 pounds base; channels, three inches and larger, $2.10 per 100 pounds base. Less than carload lots are $1 a ton higher than foregoing prices.

Rails and Track Supplies.—An aggregate of 50,000 tons of rails has been closed in the past week with several steam and traction roads, delivery of a portion of same to be this year. There also is a heavier volume of specification for track supplies, especially spikes and bolts, for this year's shipment. Light rails are in fair demand. We quote as follows:

Bessemer rails, $28 to $30; less than 500-ton lots, $32; open-hearth rails, $29; light rails, Bessemer, 30 to 45-pound sections, $34; 25-pound, $35; 20-pound, $36; 16-pound, $37; 12-pound, $38, and lighter sections down to 8-pound, $44.50, all f. o. b. mill. Track supplies vary in price according to quantity and delivery. On orders accompanying rail contracts for future delivery, we quote, f. o. b. Joliet: Angle bars, 1.65c; spikes, 2.25c; bolts with square nuts, 2.65c; with hexagon nuts, 2.80c. For carload lots or less, for prompt shipment, the following prices are asked: Angle bars, 2.25c to 2.75c; spikes, 2.40c to 2.50c; bolts with square nuts, 2.85c; with hexagon nuts, 3c.

Cast Iron Pipe.—No inquiries or lettings of any moment have developed in the week under review. Routine orders are in good volume. Prices are firm and without change, as follows: Four-inch water pipe, $38.60; 6 to 12-inch inclusive, $37.60; gas pipe, $1.00 a ton higher.

Merchant Pipe and Boiler Tubes.—The incessant demand that has been felt

since the first of the year continues undiminished. New business is to the full capacity of mills, and only slight progress is made in overtaking the delinquent tonnage on order books. Prices are very firm. We quote mill discounts, Chicago delivery, carload lots, as follows: On steel pipe jobbers are allowed a concession of one point and five per cent additional from the schedule in force:

MERCHANT PIPE.

	—Steel— Black.	Galv.
¾ to 6 inches, inclusive.....	71.2	61.2

BOILER TUBES.

	Steel.	Iron.
2¾ to 5 inches, inclusive....	62.2	49.2

Mill quotations on iron pipe are from four to five points higher than above. A concession of one point from the following quotations is allowed by Chicago jobbers on carload orders for shipment from local warehouse stocks. We quote for less than carload lots as follows:

MERCHANT PIPE.

	Black.	Galv.
⅛ to ¼ inch.....	60	44
⅜ inch	62	48
½ inch	64	52
¾ to 6 inches.....	68	58
7 to 12 inches.....	64	49

Minimum prices for wrought iron pipe, carload lots or greater, from Chicago stocks, are as follows: ⅛ inch to ¼ inch 55; ⅜ inch, 57; ½ inch, 59; ¾ inch to six inches, 64; 7 inches to 12 inches, 59. Boiler tubes from store are unchanged at 60 off for steel, 47½ for iron, and 42½ for seamless, base sizes, 2¾ inches to 5 inches.

Wire Products.—A normal summer falling-off in business is noted, but it is a welcome relief to over-burdened mills. A marked improvement in deliveries is hoped to be made before the fall movement sets in. Quotations to jobbers are without change, as follows:

Wire nails, $2.18; painted barb wire, $2.33; galvanized barb wire, $2.63; smooth annealed wire, $2.03; smooth galvanized wire, $2.33; polished staples, $2.28; galvanized staples, $2.58. Carload lots to retailers, five cents higher; less than carload lots, 15 cents higher.

Coke.—There is very little inquiry either for spot or contract coke. The local consumption, however, shows no diminution. Foundrymen report their stocks are ample for current needs, and that shipments from ovens are very regular. We quote standard 72-hour Connellsville coke at $3.15 to $3.30 for forward deliveries.

Old Material.—Scrap continues its downward movement. There is neither life nor strength to the local market. Transactions are closed only under pressure from the seller, who perforce accepts the concessions demanded by the buyer. All the large western melters are reported filled up; they decline to buy, anyway, unless the material is offered at an attractive price. There is no schedule of values on which to form a basis for a market; prices change every day, and the range of values at which material is sold varies according to the needs of the buyer or seller. Our quotations are as follows, gross tons in the first paragraph:

Old Car Wheels.....	$24.50 to 25.00
Old Iron Rails.....	21.50 to 22.00
Re-rolling Rails (3 ft. and over)	17.50 to 17.75
Old Steel Rails (3 ft. and under)	17.00 to 17.50
Light Section Relayers, 45 lbs. and under, subject to inspection...	30.00 to 32.00
Relaying Rails, subject to inspection	28.00 to 30.00
Frogs, Switches, and Guards...	15.75 to 16.00
Heavy Melting Steel.....	15.50 to 16.00

We quote net tons as follows:

No. 1 R. R. Wrought.....	$14.75 to 15.25
No. 2 R. R. Wrought.....	13.75 to 14.25
Knuckles, Couplers and Springs.	15.00 to 15.50
Shafting	17.00 to 17.50
Dealers' Forge No. 1.....	12.50 to 13.00
Pipes and Flues.....	11.50 to 12.00
No. 1 Cast, 150 lbs. and less...	17.25 to 17.75
No. 1 Mill	10.25 to 10.75
Mixed Busheling (Nos. 1 and 2)	10.75 to 11.25
Country sheet	8.00 to 8.50
No. 1 Boiler Cut.....	11.00 to 11.50
Boiler Punchings	14.50 to 15.00
Cast Borings	9.25 to 9.75
Mixed Borings, etc.....	9.25 to 9.75
Machine Shop Turnings.....	10.75 to 11.25
Railroad Malleable	16.00 to 16.50
Agricultural Malleable	15.00 to 15.25
Stove Plate and Light Cast Scrap	14.50 to 15.00
Old Iron Splice Bars.....	16.75 to 17.00

CLEVELAND.

Ore Shortage Not Alarming.—Fair Sales of Spot Pig Iron.

Office of THE IRON TRADE REVIEW, Browning Bldg., July 30.

Iron Ore.—The strike at the head of the lakes will undoubtedly strengthen the ore market materially. It has clearly been shown that things may happen in the mining district to prevent the shipment of any amount of ore asked for and the same protective precautions will have to be taken next year in buying for the season's requirements as fortunately were taken this year. Where mines have been supplying ore on long time contracts at prices much below the present value of the ore and these contracts expire with this year, it will mean a saving of many thousands of dollars to those mines to have the ore in the ground next season which would otherwise have been shipped but for this delay. With regard to the present supply of ore available for the furnaces, there is no immediate danger and if the strike is not prolonged to a greater length than now expected, little shortage will result. At the rate the ore has been coming down there should be at least two months' supply on hand. The shipments for July will probably be about 4,000,000. Escanaba will show a good increase, Ashland and Marquette will do about as well as last month and the ports at the head of the lakes will have a heavy decrease.

Pig Iron.—Sales of pig iron during the current week have been largely of the spot variety, and transactions of this kind have aggregated a considerable tonnage. One company reports sales of 2,500 tons and another of 1,500 tons in the week. The idleness of one seller's stack has diverted considerable business to another company and made conditions somewhat more active for the latter to this extent. Sales for forward delivery are light, melters appearing to be willing to take chances on the future and confining their present buying to fill in orders. Some of the spot sales however, have been of round tonnages. The complaint of furnace interests on the low iron content of the ore continues, and the production of certain grades of iron is being interfered with, because of the poor ore. Anxiety is being shown by some foundries over the ore strike, and shipments are being urged on contracts in the fear that a famine might be precipitated. Other buyers under contract, however, are taking a complacent view of the situation, requesting the furnaces to hold up shipments until they can prepare for an active fall business by completing improvements to their plants. Prices are firm and unchanged. We quote, f. o. b. Cleveland, as follows, the higher quotation being for third quarter delivery and the lower for fourth quarter:

Bessemer	$23.90 to 24.25
No. 1 Foundry.....	23.50 to 24.00
No. 2 Foundry.....	23.00 to 23.50
No. 3 Foundry.....	22.50 to 23.00
No. 2 Southern.....	23.85 to 24.85
Gray Forge	22.00 to 22.25

Coke.—There is quite a scarcity of coke for prompt shipment and commission houses and dealers are now on the hunt for tonnages of this sort. This is a direct reversal of the conditions that have existed for some time and indicates the increasing firmness in the market. One interest has raised the price 15 cents a ton to jobbers and no difficulty has been experienced in selling at the higher figures. Quotations for furnace coke for last half delivery are from $2.25 to $2.50 and foundry coke from $3 to $3.50.

Finished Material.—The shapes and plates for another vessel have been placed by the American Ship Building Co., making a total of nine vessels contracted for in the past six weeks. Bar iron is steady at 1.65c, Cleveland. Though some little business has been taken slightly below that quotation, no further concessions from the present price are expected to be made. Deliveries on sheets are improving and some widths can now be obtained in four weeks. Structural business is holding up well, although there is little new bridge business on the part of the railroads. Deliveries are be-

ing made at from three to four months. Stock demands on the warehouses are somewhat better, although mill business through jobbers is quiet. The Interstate Engineering Co. has awarded the contract to supply 1,200 tons of steel for the sub-structure of the new Pope office building in this city. The sale of 1,600 tons of traction rails for a Michigan line has been closed in this territory.

Old Material.—After several weeks of decline in prices, old material is stationary, although this condition is expected to be short-lived. A definite turn of the market is looked for very shortly. The local mills are all operating after the mid-summer shutdown, but there is little buying from this source. The Pennsylvania lines west are in the market with a monthly list of 4,000 tons and the Erie railroad is also asking for bids on its July tonnage. We quote, f. o. b. Cleveland, gross tons as follows:

Old iron rails	$22.50 to 23.50
Old steel rails (re-rolling)	17.50 to 18.50
Old steel rails (under 6 feet)	**17.50 to 18.50**
Old car wheels	22.50 to 23.50
Steel boiler plate	14.00 to 14.50
Steel axles	21.50 to 22.50
Malleable iron (railroad)	18.25 to 18.75
Malleable iron (agricultural)	16.00 to 16.50
Heavy steel	16.00 to 16.50
Country mixed steel	14.75 to 15.25
Low Phosphorus	**21.50 to 22.50**

We quote net tons as follows:

No. 1 R. R. wrought	**$16.50 to 17.00**
No. 1 busheling	14.25 to 14.75
No. 1 machine cast	18.00 to 19.00
Iron axles	25.00 to 26.00
Axle turnings	**13.50 to 14.00**
Machine shop turnings	12.00 to 12.50
Grate bars	14.50 to 15.00
Pipes and flues	13.00 to 14.00
Tank iron	12.50 to 13.50
Hoop and band iron	**8.50 to 9.00**
Sheet iron	7.50 to 8.50
Wrought drillings	12.00 to 12.50
Stove plate	14.50 to 15.00
Cast borings	**10.75 to 11.25**

CINCINNATI.

Continued Quiet in Pig Iron, But Firmness is Well Maintained.

Office of THE IRON TRADE REVIEW,
124 Government Place, July 30.

Pig Iron.—Another week of quietude has passed. There has been practically no change in the situation. Spot southern iron continues to sell mainly at $20.50 Birmingham for No. 2 foundry. The lower grades are subject to negotiations and the regular grade differences in prices can not be followed. While No. 3 foundry is quoted mainly at $20.00, Birmingham, it is quite generally believed that $19.50 can be done. No. 4 foundry is quoted at $18.50 and gray forge is irregular, ranging from $17.00 to $18.00 Birmingham. The lower grades are not having much call. We quote for prompt delivery delivered Cincinnati as follows:

Southern Foundry No. 1	$24.25 to 24.75
Southern Foundry No. 2	23.75 to 24.25
Southern Foundry No. 3	23.25 to 23.75
Southern Foundry No. 4	21.25 to 21.75
Southern No. 1 Soft	24.25 to 24.75
Southern No. 2 Soft	23.75 to 24.25
Southern gray forge	20.25 to 20.75
Northern No. 1 foundry	24.70 to 25.20
Northern No. 2 foundry	24.20 to 24.70
Northern No. 3 foundry	23.70 to 24.20

There is but little interest in forward delivery. Inquiry is confined to small lots and carloads. The sale of 1,000 tons of malleable in St. Louis territory is reported for August, September and October delivery, it being re-sale iron. There is an inquiry from a large manufacturer in the east for about 1,500 tons for early delivery. The leading cast iron pipe interest is said to have bought some iron this week. The tonnage is not known, but it is estimated at 4,000 tons. Iron is going forward fairly well on contracts and there are but few cancellations. There are some exceptions being taken as to quality and adjustments are being sought in such instances.

In northern iron interest lags, as there is not much to offer. Spot northern iron is quoted at $23.00 to $23.50 at furnaces in southern Ohio with $22.50 named in the valleys.

Trade talk as to outlook in the market indicates no special tendency. There is not much iron pressing for sale and at the same time there is ample for the wants under the limited demand. The fact that the market remains comparatively steady under the lack of interest on the part of buyers, is regarded as a healthy condition. It has been suggested that the failure of buyers to take on their next year's requirements at this time is likely to be favorable to prices than otherwise for the reason that the buying for next year will be more likely to come out under an active buying movement, instead of under an occasional transaction which would invite active competition for the orders. For fourth quarter delivery, delivered Cincinnati, we quote as follows, although prices are largely nominal:

Southern Foundry No. 1	$22.75 to 23.25
Southern Foundry No. 2	22.25 to 22.75
Southern Foundry No. 3	21.75 to 22.25
Southern Foundry No. 4	21.25 to 21.75
Southern Foundry No. 1 Soft	22.75 to 23.25
Southern Foundry No. 2 Soft	22.25 to 22.75
Gray Forge	20.25 to 20.75
Northern Foundry No. 1	23.70 to 24.20
Northern Foundry No. 2	23.20 to 23.70
Northern Foundry No. 3	22.70 to 23.20

Finished Material.—There is not much change in the market and retail orders are quite satisfactory. Mill deliveries on some lines are slightly better, but is still difficult to get anything through very early. Small orders are filled here at the following prices:

Angles, 3 x 3 and over, 2.15c to 2.25c; beams and channels, 15 inches and under, 2.15c; small angles and architectural channels, 2.10c base; plates ¼ inch and heavier, 2.10c; 3-16 inch 2.20c; No. 8, 2.20c; sheets (blue annealed) No. 10, 2.30c; No. 12, 2.35c; No. 14, 2.40c; No. 16, 2.50c; box annealed sheets, Nos. 18 and 20, 2.65c; Nos. 22 and 24, 2.75c; Nos. 25 and 26, 2.80c; No. 27, 2.85c; and No. 28, 2.95c. Iron and steel bars, 2.00c base; boiler tubes, 62 per cent off base; turnbuckles, 45 per cent off; rivets, 3.15c base; cold rolled shafting, 45 per cent off list; steel tire, 2.10c base.

Coke.—Spot coke is easy and spot furnace coke in the Wise county district is offered at prices down to $2.25 per ton. In all districts furnace coke is somewhat pressing on the market. Foundry grades are fairly steady, but quiet. There is but little doing in the way of contracts. Top quotations prevail only on the best known and fancy brands. Prices in the leading coke producing districts are as follows:

Wise County, Va., Furnace Coke, prompt shipment	$2.25 to 2.35 per ton
Wise County, Va., Foundry Coke	3.00 to 3.25 per ton
Pocahontas Furnace Coke, prompt shipment	2.50 to 2.65 per ton
Pocahontas Foundry Coke	3.00 to 3.25 per ton
Connellsville Furnace Coke, prompt shipment	2.40 to 2.50 per ton
Connellsville Foundry Coke	2.90 to 3.50 per ton
New River Foundry Coke, prompt shipment	3.00 to 3.50 per ton
New River Furnace Coke, contract	2.65 to 2.75 per ton

Old Material.—With rolling mills all filled up owing to the annual shut down there is but little buying. The market is quiet and for some descriptions prices are merely nominal. The tone is easy under lack of buying by melters and quotations are lower on some grades. We quote, f. o. b. Cincinnati, as follows:

Old No. 1 R. R. wrought net tons	$16.00 to 17.00
Cast machine and f'dy, net tons	19.00 to 19.50
Old iron rails, gross tons	24.00 to 25.00
Old steel rails (re-rolling) gross tons	18.00 to 19.00
Old short lengths, gross tons	19.00 to 20.00
Old iron axles, net tons	**26.50 to 27.00**
Heavy melting scrap, gross tons	18.00 to 19.00
Stove plate, net tons	14.00 to 15.00
Wrought turnings, net tons	**13.00 to 13.50**
Cast borings, net tons	10.00 to 11.00
Car wheels, gross tons	23.50 to 24.50

PHILADELPHIA.

Increase in Pig Iron Inquiries—Danger of Ore Famine.

July 30.

Pig Iron.—There has been a very noticeable increase during the past week in the number of inquiries for iron, especially for August and September delivery, but it does not appear that many sales have been made, either large or small. The fact is that consumers are testing the market, with a view to further depressing prices, if possible, while the producers, who understand the tactics thoroughly, are holding back cautiously. When an inquiry is made that seems to indicate a real intention to buy, they name their lowest figures, but there is a general disposition to refrain from cutting prices simply to enable a consumer to beat down the selling price of a competitor. There has been a marked ab-

sence of any real business, and the deadlock promises to continue for some time. The furnace men have been strengthened in their position by the strikes of miners and dock men at the head of the lakes, which introduced an element of great uncertainty. Few furnaces dependent on the Lake Superior mines have more than two weeks' supply of ore on hand, and many even less, and if the strike should be prolonged the situation will soon become acute, with a probable advance in price. Some inferior gray forge iron is reported to have been sold at a price close to $20, and there have been rumors of sales of basic at $21, though these lack verification. The basic market has not as yet recovered from the severe shock it received in the Milliken failure. Prices, which show a little shading in some lines, may be quoted about as follows:

No. 1X Foundry	$23.75 to 24.25
No. 2X Foundry	22.75 to 23.50
No. 2 Plain	22.25 to 22.75
Standard Gray Forge	21.25 to 21.75
Basic	21.75 to 22.25
Low Phosphorus	27.00 to 27.50

New Material.—With the exception of bar iron, there is a fair amount of new business coming into the mills, and the prospects are good for a large amount of railroad work in the near future. Considering the slump in pig iron and scrap, the market for finished material must be considered good, but manufacturers would be better pleased if the volume of orders were greater. Prices show no change, as follows: Beams, channels and angles, according to specifications, 1.85c to 1.90c; refined iron bars, 1.80c to 1.90c; steel bars, 1.75c to 1.85c; plates, 1.85c to 1.90c.

Old Material.—The market continues very weak, and prices show some heavy declines. This is largely due to forced sales of scrap carried by speculators, who, without yard facilities, are compelled to take any price the mills offer. These are still holding off on purchases. There is a general feeling that the market will show improvement in the fall, but for the present it is quiet and weak, and prices may be quoted as follows:

Old steel rails	18.00 to 18.50
No. 1 steel scrap	17.50 to 18.00
Old steel axles	20.00 to 21.00
Old iron axles	27.00 to 28.00
Old iron rails	21.00 to 22.00
Old car wheels	22.00 to 23.00
Choice scrap R. R. No. 1 wrought	19.50 to 20.00
No. 1 yard scrap	17.50 to 18.00
Machinery scrap	19.00 to 20.00
Low phosphorus scrap	22.50 to 23.00
Wrought iron pipe	15.50 to 16.00
No. 1 forge fire scrap	16.00 to 16.50
No. 2 forge fire scrap, ordinary	10.50 to 11.50
Wrought turnings	15.00 to 15.50
Axle turnings, heavy	16.00 to 16.50
Cast borings	13.50 to 14.00
Stove plates	15.00 to 16.00

NEW YORK.

Heavy Orders of Structural Steel—Renewed interest in Pig Iron.

Office of THE IRON TRADE REVIEW,
Room 1005, No. 90 West St., July 30.

Pig Iron.—The first buying movement of importance since the dull period began in May developed during the past week. While it did not involve any large tonnage, it was sufficiently general to give promise of a renewal of activity and, in conjunction with the strike on the iron ranges and docks, to forecast a firmer market as soon as the usual period of hot-weather quietness is over. Three New England concerns were the chief contributors to this activity, one important manufacturer of cotton machinery entering the market for about 5,000 tons of foundry iron for September, October and November delivery. On a part of this tonnage it is reported that some very low prices were made, $23.50 delivered being the figure currently rumored, though official verification is lacking. There is also a marked renewal of activity in the New York and Philadelphia districts, but furnace interests generally are sticking to their old level of quotations and instances of iron being offered at concessions, except in the case of off-grades, are not common. Complaint is widespread in the New England field that the scarcity of labor is proving a severe handicap at the present time. Manufacturing plants are extremely busy, particularly those turning out textile machinery, and orders now booked indicate a continuance of activity for a considerable time, but the situation is seriously complicated by the inadequate supply of machinists. Production is still at the maximum and so far no advantage has been taken of the labor difficulties in the ore mining section to blow out furnaces in early need of repairs. The Steel Corporation has blown out four stacks, Joliet No. 2, South Chicago No. 2, Clairton No. 1 and Edgar Thompson K, but in each instance this was unavoidable, as those furnaces had all reached a stage where repairs had to be made at once. Mingo No. 4 has been blown in. The closing down of the two steel-making plants in the East several weeks ago has again made itself felt indirectly in the local market of the week, but not to any considerable extent. The British market is again lower. After reaching the high figure of 59 shillings last Wednesday, No. 3 Middlesbrough warrants again started downward and opened on Monday at 56 shillings 10 pence. The week ending July 18 showed the heaviest export movement for a considerable time, the stock of No. 3 in Connal's yards being reduced 15,000 tons to slightly more than 230,000 tons. The dull conditions of the past few weeks in the local market have served to eliminate the differential in prices for forward and prompt shipment, and for any delivery through the remainder of the year tidewater quotations are as follows:

Northern Foundry No. 1	$23.00 to 24.00
No. 2X Foundry	23.00 to 23.50
No. 2 Plain	22.25 to 22.75
No. 2 Southern Foundry	23.50 to 25.00
Basic	22.50 to 23.00

Ferro-Manganese.—The tone of the market is slightly stronger, with an increase in activity and current sales reported on the basis of $62.00 seaboard for delivery in August and September.

Finished Materials. — The month closes with the announcement of contracts involving large tonnages of structural steel. The American Bridge Co. officially announces that it will furnish the steel for the Portland and Seattle extensions of the Northern Pacific, slightly less than 15,000 tons. The Snare & Triest Co., it is reported, is the lowest bidder on the New York pier sheds, but has not yet arranged for the steel required, about 7,500 tons. The American Bridge Co. has taken several eastern railway jobs, including 700 tons for Pennsylvania track elevation work at Pittsburg, 750 tons additional for the Pennsylvania terminal building in New York and 350 tons for Delaware & Hudson bridges. Pittsburg interests have taken about 6,000 tons of railway work in the middle west and on the Pacific coast. Some important contracts are pending in the east, but the large Chicago jobs are not ready for letting. No accurate estimate of the July tonnage closed can be made, as a few large contracts either way can make the month's business large or very lean. In general, however, July has been relatively quiet with brisk competition for all business developing. The month has brought out sales of about 6,000 tons of cast iron pipe in small lots in the New York district, but little additional is now in sight. Other lines are unchanged.

We quote: Angles, 3 to 6 inches x ¼ inch and heavier, 1.86c; beams, 3 to 15 inches, 1.86c; tees, 3 x ¼ and heavier, 1.91c; plates, carloads, tank, 1.96c; marine boiler, 2.26c; bar iron, 1.86c; soft steel bars, 1.76c; sheets, No. 28, black, 2.60c.

Old Materials.—The situation is generally weaker, with prices tending downward, though in many lines the

volume of business is so light as to make present quotations largely nominal. This is particularly true of cast iron borings, which the steel mills are steadily declining to buy. The Coatesville embargo has been lifted, but as a rule mills are extremely well supplied with stock and are drawing the line very closely on the quality of the scrap received, with the result that practically all shippers have a number of rejected cars on hand. There is nothing to indicate that considerably lower prices will not prevail before the dull season is over. We quote New York delivery, gross tons, as follows:

Old iron rails	$24.50 to 25.00
Old steel rails, rerolling	18.00 to 18.50
Relaying rails	27.00 to 27.50
Old car wheels	23.50 to 24.00
Old iron car axles	27.50 to 28.00
Old steel car axles	20.00 to 20.50
Heavy melting steel	15.00 to 15.50
No. 1 railroad wrought	15.50 to 16.00
Iron track scrap	16.50 to 17.00
Wrought pipe	13.00 to 13.50
Cast borings	12.50 to 13.00
Wrought turnings	13.00 to 13.50
Heavy cast scrap	17.00 to 17.50
Railroad malleable	16.50 to 17.00
Agricultural malleable	15.00 to 15.50
Stove plate	15.00 to 15.50
Grate bars	14.00 to 14.50

BUFFALO.

Slight Increase in Inquiries for Pig Iron—Sales Are Few.

July 30.

Pig Iron.—A dull market is found in pig iron this week and few inquiries, save for small tonnage, are reported, but in comparison with previous weeks the inquiries have slightly increased. Sales, however, have been very light and the contracts call for small tonnages in prompt and last quarter deliveries. Quotations continue unchanged at prices ranging from $22 and $22.50 for gray forge to $23.75 and $24 on No. 1 X foundry. The prompt tonnage placed is moving out quickly and the furnaces in this district are running full capacity. All indications point to a firm condition of the market and it is generally assumed it will hold up strong throughout the year. We quote, for last quarter delivery, as follows:

No. 1X Foundry	$23.75 to 24.00
No. 2X Foundry	23.00 to 23.50
No. 2 Plain	22.50 to 23.00
No. 3 Foundry	22.75 to 23.00
Malleable Bessemer	23.00 to 23.50
Gray Forge	22.00 to 22.50
Charcoal	27.00 to 27.50

ST. LOUIS.

New Buildings Proposed—More Inquiry for Pig Iron.

July 29.

Steel.—Local steel men say the outlook for structural steel is very promising. Office buildings are in contemplation, and in some instances plans have been outlined, at the following locations in St. Louis:

Northwest corner Broadway and Pine street; Broadway, between Pine and Chestnut streets; Broadway and St. Charles street; hotel at Eighth and St. Charles streets.

The Selden-Breck Construction Co., of St. Louis, has closed a general contract for the erection of the Buchanan Hotel, at St. Joseph, Mo. About 750 tons of steel will be required.

The Terminal Railroad Association last week closed a contract with the leading interest for 2,500 tons of steel rails for delivery next year.

The City of East St. Louis, Ill., has asked for bids, to be opened Aug. 1, for about 350 tons of steel to be used in repairing and constructing a railroad viaduct in that city. Steel bars are in good demand, and there has been some complaint about laxity in delivery. Light rails also are in active demand. A little price-cutting is reported, but the complaint is not serious.

Pig Iron.—Inquiries for pig iron were more numerous last week than for some time, and prices evinced a firmer tone, although no advances have become effective for immediate or future shipment. Sales of spot iron have been made at from $21 to $22, for No. 2, f. o. b. Birmingham. Some orders are booked in this territory for shipment over the first quarter and first half of next year at $18.50 for No. 2, f. o. b. Birmingham, and furnaces are holding firm at that price for shipment to this territory. Our quotations, f. o. b. Birmingham, to which $3.75 freight is to be added, for spot delivery, follow:

No. 1	Southern	$21.50 to 22.00
No. 2	Southern	21.00 to 21.50
No. 3	Southern	20.00 to 21.00
No. 4	Southern	20.00 to 20.50

Coke.—Prices for 72-hours Connellsville coke, f. o. b. ovens, remain firm at from $3.35 to $3.60. The freight to East St. Louis is $2.80 and to St. Louis, $2.90. A better demand is manifested.

Scrap Iron.—Local dealers report a marked decline in scrap iron prices, with little indication of better times until cold weather. Our prices follow:

	GROSS TONS
Second-hand Relaying Rails, according to time of delivery	$30.00
Steel rails (less than 3 feet)	15.00
Car wheels	20.00
Iron rails	24.00
Re-rolling steel rails	16.00
Heavy melting steel	15.00
Country steel mixed	14.00
	NET TONS
No. 1 R. R. wrought	$15.00
No. 2 R. R. wrought	14.00
Iron splice bars and fish plates	18.00
Iron car axles	22.00
Steel car axles	19.50
Iron shaftings (3 to 6 inches)	18.00
Country wrought	14.00
Locomotive tires, smooth inside	15.00
Pipes and flues	12.00
Heavy machinery	16.00
R. R. cast (less than 300 pounds)	14.50
No. 1 Busheling	13.00
No. 2 Busheling	12.00
Boiler sheet and rings	12.50
R. R. cast borings (free of inferior quality)	10.00
R. R. wrought turnings	13.50
Machine shop turnings (free from brass)	11.00
Railroad malleable	16.50
Agricultural malleable	14.00
Cast stove plate	14.00

BIRMINGHAM, ALA.

Northern Strike Regarded as Favorable to Southern Interests—Market Quiet.

July 29.

While the general statement is made that the iron market in this district is not so active, there appears to be satisfaction on all sides, probable make being well covered for quite a little while, and all indications as favorable as could be wished for. The strike in the Mesabi ore fields disturbing the iron production in the north is looked to be of benefit to the southern iron manufacturers and one interest has already made the statement that spot iron at $30 per ton is not altogether an improbability. The furnace companies in this district are not in position to handle much spot business, no matter what might be the price. The probable make for the fourth quarter of this year has been pretty well covered, and what orders are now being received are for this quarter iron. The present make shows but little improvement over what it has been for the past several weeks. The raw material supplies are yet a proposition with some of the larger iron manufacturing companies. The Sloss-Sheffield Steel & Iron Co. reports its ore supplies sufficient for all furnaces. The Tennessee Coal, Iron & Railroad Co. is pushing the rehabilitation of the mines at Ishkooda, in Jefferson county, and at Champion, in Blount county, and it is expected that there will be a steady supply coming forth in the next week or two. The Woodward Iron Co. is already getting ore from its new mines on Red Mountain. Coke is in abundance despite the fact that much of the product is being sold on the open market. Limestone and other dolomite is in plenty also.

The quotations continue firm, fourth quarter iron being priced between $20 and $21 per ton, No. 2 foundry; $18 to $18.50 for No. 2 foundry iron is the quotation for the first half of next year. There is a little better inquiry being received in this district as to future iron.

The Birmingham rolling mills will shut down entirely. The differences between employees in the puddling mills because of the opposing organizations, the Sons of Vulcan and the Amalgama-

ted Association of Iron and Steel Workers as to which organization should have the contract with the company, the Amalgamated now having same, brings about the necessity of closing the plant. The Bessemer and Gate City rolling mills (Tennessee-Republic Co.) are both going on and the statement is made that there will be continual operation all through the summer. The Bessemer works no union men at all, while at Gate City the Amalgamated Association has the upper hand among the employees.

Cast iron pipe foundries and machine shops are all busy. The melt in this district is exceedingly heavy and prospects for the future bright.

The report of the Consolidated Coal & Iron Co. for the quarter ending June 30, recently given out, shows a good increase in earnings under the administration of Guy R. Johnson.

St. Louis parties have purchased more interests in the little Quinn furnace near Attalla, Ala. The furnace was to be operated on charcoal, but because of the scarcity of that product coke is being used.

BRITISH IRON MARKET.

Pig is Quiet, But Strength is Very Well Maintained.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., July 20.

The pig iron market is quiet, but maintains great steadiness, and in view of the practical cessation of American orders the strength of the market is causing some comment. Yesterday's prices were 56s 7d ($13.84) for Cleveland iron, a rise on the week of about 4d. Only one cargo has gone to the United States since the beginning of the month. The present stock is 241,306 tons as compared with 631,000 twelve months ago. July is always a slack time for exports, and the present quietude therefore causes no surprise. Demand from the continent continues active, in contrast with the slackening off from America. In hematite, orders are just about sufficient to absorb supplies. There are no stocks on the east, and not more than 20,000 tons on the west coast. In the Midland district, pig iron is stronger, consumers continually pressing for deliveries. All the Midland smelters are holding out firmly for recent prices. The heat wave has apparently reached us, and this will reduce demand in the forges and mills, most of which will have to cease operations if the present heat continues. There are practically no stocks at all at any of the Midland furnaces and the general belief is that September will see a strong increase in demand. Northampton iron is quoted at 60s ($14.68), Derbyshire 62s ($15.18) and South Staffordshire Forge 59s ($14.44).

METAL MARKET.

NEW YORK.

July 30.

Copper.—Brisk competition continues among independent interests for what business is now being placed, but the aggregate of this is not important as the larger consumers are still holding aloof or, at most, are merely covering for their immediate needs. With these conditions prevailing, the tone of the market is naturally weak and the general run of quotations is slightly lower, being within the following limits: Lake, 21¼c to 22c; electrolytic, 20¾c to 21¼c; casting, 19¾c to 20¼c. The foreign market manifests little change.

Pig Tin.—In the local market the limited supply of spot metal is held by a few interests and is being doled out at about 41c to 41¼c, which is somewhat higher than the import price. Conditions abroad are easier, though price fluctuations are extremely narrow.

Pig Lead.—Although the London market is slightly higher, there is little change in the domestic situation, either as regards supply and demand or prices. Desilverized at New York remains at 5¼c.

Spelter.—There is little activity in the current market, and slight declines are to be noted both here and abroad. The New York range is 6.00c to 6.05c, and the St. Louis 5.85c to 5.90c.

Antimony.—The level of quotations prevailing for several weeks past manifests no change, prices being about as follows: Cookson's, 11½c to 12c; Hallett's, 10½c to 11c; ordinary brands, 9¾c to 10¼c.

ST. LOUIS.

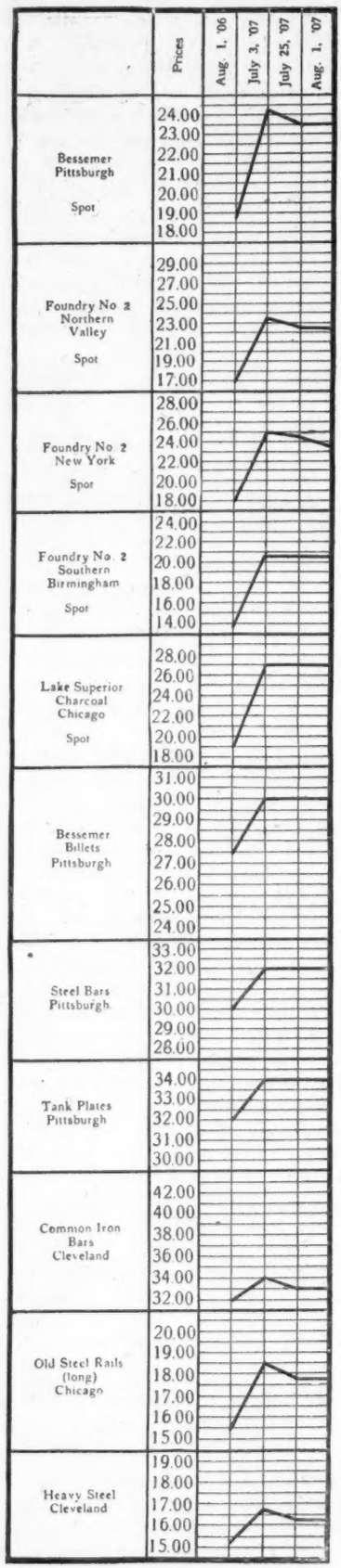
Joplin, Mo., July 29.

Lead and Zinc.—The expected improvement in lead and zinc did not come as a result of the decreased production of last week. The highest price paid for zinc was $50 a ton, while the basis for 60 per cent ore was from $45 to $47.50, a few choice lots were sold at a basis of $48.

Ore prices generally declined from 50 cents to $1 a ton. One bin of choice lead was sold at $64 a ton, but the prices range from $50 to $62.

The highest price was paid for this week's delivery. The output will be affected by labor shortage, and the starting of new mills is offset by the closing of old ones through lack of laborers and to await better prices.

PRICE CHART.



STRIKE CONTINUES.

(Continued from page 159.)

commonly practiced, however, and the policy of the mining companies has offered no opportunity for violence. The determining factor in the length of the strike at the mines continues to be ability of the men to hold out. No concession will be made by the mining companies. Men who wish to work will be protected on the companies' property by the sheriff, and those who don't wish to work may stay out as long as they please.

The number of miners wishing to return to work is increasing and sentiment locally continues to grow more strongly against the strikers. Business on the range and tributary to it has been much diminished; no credit is being given to the idle men and every means is being used to discourage the strike. The strike has been a hard blow to range towns, but by its policy the Steel Corporation has avoided any of the onus of the trouble which has been clearly shifted to the shoulders of the Western Federation of Miners. In consequence, this organization has never had a chance to win the public sympathy. The people on the range are satisfied that the miners are receiving a fair wage, for they point to the fact that after every pay day thousands of dollars are sent through the mining town post offices to Europe. This would scarcely be possible were they starving.

The strikers claim to have ample resources for supplying provisions to the men and a co-operative store has been opened at Hibbing, but even there credit is limited.

The pacific attitude of the railroads toward the dock strikers will last until today noon, and no longer. Thereafter the plan which is fully developed for resuming operations on the docks will be put in force. A statement will be issued today indicating what the railroad intends to do, and why it feels justified in so doing. The delay until Wednesday is to give the dock employes, who are to hold another meeting meanwhile, a last chance to return to work. During the week the striking men have held several meetings and through the mediation of Mayor Cullum of Duluth, have submitted several propositions to the railroad which have in their contents grown more conciliatory, but which have continued to demand the recognition of the union and the increase in wages. Should the proposition from the men after today's meeting still demand these concessions from the railroad, there will be no further parley. The Mesabi road alone has about 4,500 cars filled with ore and ready to be brought to the dock and shipped, and at Two Harbors there is about 150,000 tons right on the dock. Whether the aggressive action of the railroad will precipitate violence, either at the docks or at the mines, is impossible to predict, but it is believed that the adequate preparation made by the mining companies and the sheriff to protect themselves has overawed the strikers.

The most serious consequence of the trouble is the departure of many laborers, miners, steam shovel runners, and engineers.

NEW RECORD MADE

In Earnings of Steel Corporation.—New Business Not So Heavy.

New York, July 30.—All records of the United States Steel Corporation in the manufacture of steel were shown to have been broken today when the company's report for the quarter ended June 30 was made public after a meeting of the board of directors.

The report shows that the company's total net earnings for the spring quarter were $45,503,705, a high water mark record for any single quarter in the company's history. This record-breaking total is an increase of $5,378,672 over the corresponding quarter last year. The amount of unfilled business on hand June 30 was 7,603,878 tons, an increase of 794,289 tons over last year.

The statement also shows that $18,500,000 was set aside after all charges, interests and dividends were paid, for new plants, additional property and construction. This is an increase of $5,500,000 as compared with the appropriation for the same purposes for the quarter ended June 30, 1906.

After the meeting, a representative of the corporation said orders booked during July were 25 to 30 per cent less than those of the same period year ago. No change was made in dividend rate or officials.

WILL DEVELOP CUBAN IRON ORE DEPOSITS.

Verification is given to the report of the discovery of a large body of iron ore in Cuba by interests identified with the Pennsylvania Steel Co. The ore body is on the summit of a plateau 10 miles long and four miles wide, in the province of Oriente and in the district of Mayari on the north coast of the island, about 12 miles from the bay of Nipe, which is considered one of the best of Cuban harbors. On the surface the ore lies in particles, but the mass of the deposit is in the form of clay. A test tonnage brought to the mills of the Pennsylvania company has been worked with satisfactory results. It is now proposed to extensively develop the property, and an issue of $5,000,000 in bonds has been authorized for this purpose. The ore deposits are owned by the Spanish-American Iron Co., which is controlled by the Pennsylvania Steel Co., and the latter has guaranteed the bonds.

UNITED STATES STEEL CORPORATION.
Earnings.

April, 1907		$14,600,838
May, 1907		16,056,832
June, 1907		14,846,035
Total Earnings afer deducting all expenses incident to operations, including those for ordinary repairs and maintenance of plants, empolyes' bonus funds, and interest on bonds and fixed charges of the subsidiary companies		$45,503,705
Less, Charges and Appropriations for the following purposes, viz.:		
Sinking Funds on Bonds of Subsidiary Companies	$ 595,670	
Depreciation and Reserve Funds (Regular provisions)	6,127,560	
Special Improvement and Replacement Funds	1,000,000	
		7,723,230
Net Earnings		$37,780,475
Deduct:		
Interest for the quarter on U. S. Steel Corporation Bonds outstanding	$ 5,662,385	
Sinking Funds for the quarter on U. S. Steel Corporation Bonds, viz.:		
Installments	$1,012,500	
Interest on Bonds in Sinking Funds	262,078	
	1,274,578	
		6,936,963
Balance		$30,843,512
Dividends for the quarter on stocks of the United States Steel Corporation, viz.:		
Preferred, 1¾ per cent	$ 6,304,919	
Common, ½ per cent	2,541,513	
		8,846,432
Surplus for the quarter		$21,997,080
Less, appropriated from Surplus for the following purposes, viz.:		
On account of expenditures made and to be made on authorized appropriations for additional property, new plants, construction and discharge of capital obligations		18,500,000
Balance of Surplus for the quarter		$ 3,497,080

W. J. FILBERT,
Comptroller.

THE IRON TRADE REVIEW

Devoted to Iron and Steel Manufacture and to the Machinery, Metal-Working and Foundry Trades

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THE SEASON'S ORE REQUIREMENTS.

Naturally there has been much discussion in ore and iron circles as to the effects of the dock strike upon the supply of ore to furnaces. The position and temperament of the individual seems to have exercised more influence upon his conclusion than the facts of the case, which are of a statistical nature and, therefore, should not afford room for very widely variant conclusions.

The statistics of ore on Lake Erie docks on December 1 and May 1, last, showed practically no change from the previous year. While there are no statistics of stocks in furnace yards, there is no particular reason for assuming that these stocks have changed materially. Season shipments may then with propriety be compared with pig iron production, past and prospective, in an effort to determine the probable ore needs.

Considering the stocks carried at various points, the ore shipments of a season may properly be compared with the pig iron production of the twelvemonth from July 1 to July 1. The production of pig iron in the second half of last year was 12,724,941 tons, and that in the first half of this year was 13,478,044 tons, making a total for the twelvemonth of 26,202,985 tons. The shipments of Lake Superior ore last season, by lake and all-rail routes, were 38,522,139 gross tons.

There is so little change in pig iron production in districts outside those tributary to Lake Superior ores, that it is safe to proceed on the basis that ore shipments this year should increase by the amount which the country's pig iron production is likely to increase, in order to maintain the status quo, but these shipments must be in terms of iron units, so that the statistical tonnage must be increased proportionate to decrease in iron content. The decrease may be estimated roughly at 1 per cent, and on an average iron content, natural, of about 50 per cent, this means an increase in tonnage of about 2 per cent. To make 26,200,000 tons of pig iron in the twelvemonth beginning July 1, 1907, there would have to be brought down this season about 39,250,000 tons of ore, as ores go this season.

Indications certainly are not that there will be any very large increase in pig iron production in the forthcoming twelvemonth. The production in the past twelve months, 26,202,985 tons, compares with 25,300,000 tons in the calendar year 1906, and 23,000,000 tons in the calendar year 1905. Certainly 1905 was a prosperous year, and it required an extraordinary demand to make an increase of 3,200,000 tons upon it. Probably the iron trade will do very well indeed to make 27,000,000 tons of pig iron from July 1 last to July 1 next. That would require less than 41,000,000 tons of ore movement this season, on the basis of computation we have been following.

Now as to the ease or difficulty with which 41,000,000 tons could be shipped. The gain to July 1 this season is smaller than it might have been, owing to the late opening of navigation. This exerts a confusing influence on the statistics. The effect of the late opening passes with the April statistics, but the impress remains on the statistics of shipments to July 1. The months have compared as follows with last year:

	Gross tons.
April	816,410 loss
May	1,316,331 gain
June	944,113 gain
To July 1	1,444,034 net gain

On the average of the past two seasons, 31 per cent of the season's lake movement has been accomplished to July 1, leaving 69 per cent for the remaining months. A gain of 1,444,034 tons in 31 per cent of the season would be a gain of 4,658,000 tons in the whole season, making a total of 43,180,000 tons, or two millions in excess of 41,000,000 tons.

This, however, is not fair, since the late opening unduly affected the showing to July 1. May and June this year showed a gain over last year of a trifle more than 23 per cent; applying this percentage to the total shipments last season from July 1 on, which were 26,271,999 tons, shows a gain of 6,063,000 tons. Adding this to the actual gain to July 1 shows a total gain of 7,507,000 tons, which would make this season's total no less than 46,000,000 tons, or five millions in excess of 41,000,000 tons.

These figures are discussed in this manner, in full knowledge of the various disturbing elements of difficulty in securing lake tonnage on account of the competition of grain, possibility of an early closing of navigation, the possible desirability of increasing stocks at furnaces and lower lake docks, and so on. These are merely possibilities; their net total would not run far into millions of tons, and with all this leeway, it is idle to talk of a fortnight or a month's tie up of docks which ship about two-thirds of the Lake Superior output making any serious impress upon the blast furnace situation.

On the contrary, it is altogether probable that the ore shipping season will end with boats finding difficulty in obtaining cargoes, and shipments much less than they could have been, had necessity demanded.

The pig iron markets have been remarkably strong in the past six weeks, considering the extreme dullness. Nothing has done more to cre-

ate disquieting thoughts in the minds of buyers than the avidity with which the dock strike has been seized upon in some quarters as a "bull" argument for the pig iron market.

SLIDING SCALE CONTRACTS.

On the face of it the sliding scale contract for coke and castings, based on pig iron prices, looks to be fair, but, as the prices for spot pig iron are used as a basis, one side or the other is liable to be placed at a disadvantage.

In the case of furnace coke contracts, the furnace using the coke may be making iron sold for delivery far ahead of the time of its being made, and the spot pig iron market may be out of all proportion to the average price the furnace is getting for its iron. Yet the coke contract calls for a settlement on spot prices for pig iron. Last winter this worked a great hardship on the furnaces.

The same principle applies on castings. The price the user of the castings may pay the foundry is liable to be either above or below an equitable basis for either the foundry or his customer.

Still these contracts are being made right along and seem to have become a fixture in the business. It may be noted, however, that when the buyer has the privilege of choosing between a flat price contract and a sliding scale basis, he will take the flat price basis. The seller is apparently the one who has the advantage for the most part in these arrangements.

Last year coke was freely offered and ovens were freely offering to sell for forward delivery—there were but few sliding scale contracts, as it was a buyers' market and he bought at the flat price.

With foundries busy since the first of the year and with a heavy call for machine tool castings, the foundry dictated the terms of the contract, which was on the sliding scale basis. It could not be charged either with taking advantage of the situation, as there were disappointments in deliveries of pig iron on contracts, and in such cases the foundry was obliged to buy pig iron and pay spot prices to keep running.

These contracts for castings will for the most part expire Jan. 1, 1908, and some users of castings are interesting themselves now with a view to providing for a fairer basis of buying from the foundries than has obtained this year. It is realized that the basis of settlement must be sufficiently liberal to the foundry to insure delivery of the castings and give the foundryman a profit and an incentive to be anxious to furnish the castings upon call from the customer.

In the case of machine tools, the castings represent a large percentage of the material used, and the price of the castings is an important feature in figuring costs. As costs for forward delivery under the present condition of the machine tool trade are to be worked out the castings' cost becomes an estimate, because it is based on the spot pig iron quotation that may prevail at the time the casting is called for.

It is not the purpose of this article to solve the problem, but to call attention to the difficulties surrounding a business condition. It may be noted in passing, however, that pig iron can be bought for next year's delivery for the first six months. Castings could be contracted for based on the price at which the foundry can purchase iron. A fair margin of profit could be allowed the foundryman to protect him against non-delivery of the iron by the furnace. Such an arrangement would appear to be calculated to remove the speculative element from these contracts.

The trade journal quotations on which these sliding scale arrangements are based have been subject to criticism when they worked a hardship upon the buyer or the seller. One purpose we have in offering this article is to acquaint our readers with the fact that we have knowledge of the importance of presenting accurate pig iron quotations. It means money in making settlements on contracts and our figures will always be found reliable.

Seek Company's Control.—Interests whose identity is yet unknown, are working to secure control of the New York Air Brake Co., and the firm of S. B. Chapin & Co., New York, has been appointed to receive deposits of shares, subject to the terms offered by the prospective purchasers. The New York Air Brake Co. is incorporated under the laws of New Jersey with an authorized capital stock of $10,000,000. The stock has recently been rapidly advancing on the New York stock exchange.

CLOSER ALLIANCE

With Other Metal Trades Unions Proposed by Iron Molders—Female Labor Condemned.

The introduction of resolutions by delegates occupied the major portion of the sessions of the past week of the Iron Molders' union of North America in annual convention at Philadelphia. Among those introduced was the proposal that the various local unions affiliate with the iron and metal trades' council, composed of blacksmiths, machinists, patternmakers, steam fitters and engineers, with the aim in view that all branches of the metal trades may prove allies to any trade that may be attacked. It was urged that the executive board meet with the executive bodies of the other unions with the intention of arranging an agreement to support each other in time of trouble. It was also proposed that on and after May 1, 1908, the wages of all jounrneymen molders working on the jurisdiction of the Iron Molders' union of North America shall be $5 per day and that eight hours shall constitute a day's work. With reference to the prosecution of the officers of the Western Federation of Miners, the committee on resolutions in submitting a partial report, which was adopted, condemned the manner of the arrest of Moyer, Haywood and Pettibone, and extended sympathy to the accused, along with the recommendation that the executive board of the union send circulars to all affiliated locals of the Iron Molders' union and solicit financial aid for the assistance of the mining union officials. It was also recommended that the convention give power to the executive board and officers when dealing with the employers in the making of agreements, to eliminate the employment of women and child labor in the core room and foundry, as being detrimental to the latter's health and contrary to the station in life for which they were intended.

Among other matters brought to the attention of the various committees were the recommendations that a pension of $12 a month be granted those members who have been affiliated with the union for 25 consecutive years and were unable to work at their trade after reaching the age of 60 years; that all apprentices who have served six months and over be taken into the Iron Molders' Union of North America as junior members, who shall be entitled to vote only upon questions pertaining to apprentices, unless permitted by a majority vote of their union; that the executive board of the Iron Molders' union be instructed by the convention to use all efforts in bringing the molders, machinists and patternmakers into one body for protection.

HIGHER PRICES

For Machine Tools For Next Year in Foreign Lands and Probably in This Country.

Office of THE IRON TRADE REVIEW,
124 Government Place,
Cincinnati, July 29.

The situation shows but little change from week to week at this season of the year. The shops are too fully engaged with orders of long standing and have too many orders unfilled to undertake changes in types or to add special attachments. The outlook for export business for next year is good and some manufacturers are already figuring on making prices for next year's delivery. Some advance in quotations is likely. One manufacturer stated that more than 50 per cent of his output was sold abroad and in correspondence with his foreign agents he was putting up prices for next year's deliveries.

Most of the machine tool manufacturers have a good supply of castings on hand and owing to the high price of pig iron, they are drawing to a large extent on their stocks. These castings are mainly bought on a sliding scale basis for pig iron prices and the shops are not inclined to add to their stocks at this time.

That there is full confidence in the future of the trade is evidenced by the additions and increasing of facilities which continue steadily.

The Cincinnati Electrical Tool Co. has reincorporated its business and raised its capital stock from $15,000 to $50,000 and will materially enlarge its output by the addition of machinery. The present capacity of the plant is taxed to its utmost and is unable to supply the demand.

Thos. Lee is erecting a concrete building at the corner of Second and Elm streets which is to be used for the manufacture of blow and exhaust piping. His fireproof window plant will be in the present quarters across the street where both branches of the business are now carried on.

The S. Obermayer Co. has enlarged its capacity for the production of core compound 300 barrels per day by the new plant at Rillton, Pa., just outside of Pittsburg. The factory is 200 x 200 with a capacity of 200 tons sea coal per day.

H. T. Frohman, treasurer and general manager of the S. Obermayer Co., has gone to Michigan for a short vacation.

J. Cecil Nuckols, in addition to handling the advertising of the S. Obermayer Co., has taken charge of the advertising department of the Cincinnati Electrical Tool Co.

It is currently reported in machine tool circles that Cincinnati is to have a plant for the manufacture of chucks which it is said will be known as the Cincinnati Chuck Co. It is said that the necessary machinery has been purchased and operations will begin some time in the fall.

The McIlvain & Spiegel Boiler & Tank Co., has an order for a 150-horsepower boiler to go to Cuba.

INCREASED DEMAND

For Machinery on the Pacific Coast.—Plenty of Good Coking Coal.

(Special Correspondence.)

Seattle, Wash., July 26.—The Pacific coast machinery market is very noticeably improving and is much stronger at present than it was a month ago. Saw mill, logging and mining machinery is particularly active; the lumber business has recovered from the effects of the east bound freight embargo which was enforced last spring by the northwestern railroads and the trade in lumbering machinery exhibits a much firmer tone as a result of these improved conditions. The Allis-Chalmers Co. reports as follows: "Inquiry for machinery during the last week has been much brisker than at any time during the summer. The demand for lumbering and mining machinery has never been better than at present and there is every reason to believe that this activity will continue. We are also receiving many inquiries for electrical machinery for irrigation purposes." Other heavy machinery dealers made substantially similar reports.

Good coking coal is not plentiful on the Pacific coast and it is hoped that some of the extensive beds now being opened in Alaska will yield coal from which good foundry coke can be made. It is estimated by the United States department of geology that 12,644 square miles of Alaska are underlaid with coal bearing rocks; 1,238 square miles contain known deposits of coal ranging in age from carboniferous to tertiary and in quality from good anthracite through the high grade semi-bituminous steam and coking coals down to lignites. A heavy proportion of these beds is reported as containing good coking coal occuring in seams of unusual thickness. The richest fields are found along the southwest coast, and in the valleys of the Matanuska and Bering rivers. The industry is as yet practically undeveloped, the product in 1906 being but 6,660 short tons valued at $20,000. Most of this was consumed locally.

As an illustration of the results that the local foundrymen are obtaining with their non-union men the following is of interest: A Puget Sound firm manufacturing logging engines, who wishes its name withheld reports that previous to the strike it took one molder and three helpers 12 days to make the mold for a 5,900-pound engine bed; with the present non-union crew, the same bed is being molded by the same number of men in six days. The company pays the helpers day wages and pays the molder $48 for every good engine bed cast; this means that the non-union man is earning about $8 a day whereas the union molder only earned $4.

Two new furnaces, two new 300 horsepower Hazelton porcupine boilers, and a new 60-inch squeezer are being installed by the Seattle Steel Co., E. M. Wilson, president, at its rolling mill at Youngstown near Seattle.

Work on the new stove foundry at Puyallup, Wash., is being rushed to completion. The contract for the buildings calls for their completion by August 1; the plant is expected to be in operation by Sept. 1. One carload of machinery has been shipped and others are about ready. The main building will be a frame structure 50 by 150 feet in size. The plant will be operated by the Harold Steel Range Co. now located at 201 S. Division street, Grand Rapids, Mich. W. H. Culver, manager of the company, will have charge of the Puyallup works. Eventually the company will remove its entire business to Puyallup.

A recently incorporated concern titled "The Irrigation Power Co. of Tacoma" will soon commence construction work on a plant at Puyallup, Wash. The company will manufacture a line of irrigation pumps driven by patent current motors which the firm is exploiting. It is claimed that in a stream running five miles per hour the machines will pump 400 gallons per minute against a 40 foot head. C. L. Robertson is backing the enterprise, the general offices will be in Tacoma and the firm is capitalized at $1,000,000.

The beginning of a new era for the man working in the shop is seen in the evident attention that is being paid by many Pacific coast firms to the introduction of devices tending to minimize the occurrence of accidents. Cheap but effective guards are built around the dangerous gear-wheels and belts in many plants; warning signs are frequent. In the plant of the Seattle Car Mfg. Co. one sees posted the following: "The running of belts upon pulleys while shafting is in motion will not be allowed. Do not clean machinery while it is in motion. The violation of this rule will be cause for dismissal." This tendency toward improved conditions is due partly to the rigorous enforcement of the state laws and also to the appreciation, by many manufacturers, of the fairness and economy that result from every reasonable effort to prevent casualties.

FEW PESSIMISTS

Among Machinery Dealers in the East — Railroad Buying Expected.

Office of THE IRON TRADE REVIEW,
Room 1005, No. 90 West St.,
New York, July 30.

A somewhat better tone prevails among those interests deriving a considerable part of their trade from the railways, as there is evidence that more active purchasing can be expected. While some railway lists have been out some time without developing into business and in one or two instances, it is reported, lists have actually been withdrawn, southern and western roads are evidently about ready to begin purchasing again. The Pennsylvania is to purchase an extensive list of tools for installation at a western shop and the requirements of the New York Central at West Albany, where a large boiler shop is to be erected, will be heavy.

Aside from the railway field, however, there is the usual run of midsummer business and it is only occasionally that one can find a manufacturer or dealer who holds a pessimistic view of the outlook. The past ten days have developed a very satisfactory volume of orders, one selling house disposing of a dozen milling machines in one lot and in addition closing several other attractive contracts. There is still little improvement in deliveries, as manufacturers as a rule are only holding their own and are making little inroad into the accumulation of orders. It is a fact indicative of their faith in the future that they manifest a cheerful willingness to cancel the order whenever a customer becomes at all impatient over the time he has to wait for shipment.

Steel rope interests report a very heavy demand from contractors, both for new installations and repair purposes. Dredging operations are also contributing heavily to this trade, and deliveries are becoming more and more remote.

The Rome Locomotive & Machine Co., Rome, N. Y., which is now engaged in making important additions to its plant, is asking bids on two cranes, one of 30-ton capacity with a 65-foot span and one of 25-ton capacity with narrower span. It is understood that other equipment is to be purchased.

The L. J. Wing Mfg. Co., which recently removed from 136 Liberty street to 90 West street, New York, has completed a number of important installations of its turbine fan system of forced draft. These include the equipment of 1,400 horse power of boilers for the New York Telephone Co.; 1,000 horse power for the Siegel-Cooper Co., New York; 600 horse power for the Long Branch plant of the Consolidated Gas Co. of New Jersey, and 1,000 horse power for Hahne & Co., Newark. A brisk demand is reported for ventilating fans.

The Lidgerwood Mfg. Co., 96 Liberty street, New York, is building a small extension to its foundry at Newark. In this it will install air blast apparatus for the cleaning of castings. A Wing disc fan has been ordered to clear the building of dust.

Benisch Bros., Jamaica avenue, Brooklyn, have ordered a 15-ton Northern crane with 75-foot span for installation at their monument works. It is understood that motors and a generator are to be purchased.

Muralt & Co., 114 Liberty street, New York, have practically completed the letting of contracts for the equipment of a large central power plant in the United States navy yard at Charleston, S. C. At latest accounts, however, the contract for coal-handling apparatus had not been let.

COMMISSIONER ROBT. WUEST.

Robert Wuest, who has been secretary of the National Metal Trades Association since 1902 and acting commissioner since November, 1905, when ill health

ROBERT WUEST.

compelled Commissioner Eagan to relinquish his duties, has been unanimously elected commissioner by the administrative council of the association. Wm. Wuest has performed the difficult duties of his dual position with consummate ability, and his election comes as a fitting recognition of his services.

PERSONALS.

J. A. Norman, formerly chief clerk to the vice president of the Republic Iron & Steel Co., has accepted the position of coal sales agent of the Birmingham Iron Co., Birmingham, Ala.

Samuel W. Traylor, president of the Traylor Engineering Co., New York, has returned from an extensive business trip through the southwest.

Charles E. Conley has become associated with the Hoopeston Malleable Iron Works, Hoopeston, Ill., in the capacity of superintendent. Mr. Conley was for years similarly connected with plants at Muskegon, Mich., and Marion, Ind.

Otto Dieckmann Jr. has been appointed manager of the direct sales office of the Atlas Engine Works at St. Louis. Mr. Dieckmann has been representing the Atlas company at St. Louis for some time past, and will continue his offices at the Chemical building.

John D. Bird, superintendent of the gas engine department of the Fairbanks Morse Mfg. Co., Beloit, Wis., will sever his connection with that company Aug. 1 to become assistant manager of the new plant of the International Steam Pump Co., at Harrison, N. J.

David Woodward has been made president of the Atlanta Steel Hoop Co., Atlanta, Ga., succeeding C. E. Currier, who resigned to devote his attention to other business interests. George Connors, secretary and treasurer of the Atlanta Steel Hoop Co., has also tendered his resignation.

George B. Dusinberre has opened an office as consulting electrical engineer in the Electric building, Cleveland, and will make a specialty of power plants and electric railroad work. Mr. Dusinberre was formerly Cleveland manager for the Westinghouse Electric & Mfg. Co., but recently resigned.

H. F. Ellard, general superintendent for the Cleveland-Cliffs Iron Co. on the Gogebic range and located at the Ashland mine has resigned to accept the management of the Comanche Mining & Smelting Co. at Silver City, New Mexico. Mr. Ellard leaves the Lake Superior district with much regret, but goes to take up a much larger work which will include the mining of gold, silver, copper, lead, zinc, iron and lime and the operation of a railroad and smelting plant.

H. P. Ranney, head of the foundry and pattern shop departments of the American Ship Building Co., Cleveland, has tendered his resignation, effective Aug. 15, to devote his entire attention to the duties of president and treasurer of the Bettcher Mfg. Co., Cleveland. The Bettcher company manufactures wrought iron and steel washers, felloe plates, rivets, riveting burrs and a general line of stamping work. Mr. Ranney's resignation will sever a connection of 17 years of industrious effort in the interests of the American Ship Building Co. He entered the employ of the company as an office boy in 1890, and was advanced by successive steps to his present position.

PRODUCTION OF PIG IRON IN THE UNITED STATES IN THE FIRST SIX MONTHS OF 1907.

Statistics collected from the Manufacturers by The American Iron and Steel Association, all in Gross Tons.

Production in the first half of 1906, 12,582,250 Gross Tons; second half of 1906, 12,724,941 Tons; first half of 1907, 13,478,044 Tons.

Total Production of All Kinds of Pig Iron.

TOTAL PRODUCTION OF PIG IRON BY STATES.

States.	Blast Furnaces. In blast Dec. 31, 1906.	Blast Furnaces. June 30, 1907. In.	Out.	Total.	Production. Gross tons of 2,240 pounds. (Includes spiegeleisen and ferro-manganese.) First half of 1906.	Second half of 1906.	First half of 1907.
Massachusetts	1	2	0	2	10,218	10,021	8,746
Connecticut	3	2	1	3			
New York	17	17	9	26	746,271	806,388	859,125
New Jersey	9	8	3	11	167,820	211,570	195,245
Pennsylvania	132	141	19	160	5,688,743	5,559,126	5,964,884
Maryland	4	4	1	5	194,907	191,802	221,145
Virginia	14	16	9	25	257,806	225,719	260,912
Georgia	2	2	2	4	46,865	45,734	26,173
Texas	1	1	3	4			
Alabama	31	34	15	49	825,090	849,758	861,771
West Virginia	3	4	0	4	136,662	167,872	151,643
Kentucky	5	5	3	8	35,533	62,594	79,013
Tennessee	13	14	7	21	203,569	223,305	193,371
Ohio	57	58	8	66	2,675,812	2,651,321	2,815,174
Illinois	22	24	0	24	1,011,639	1,145,227	1,263,258
Michigan	12	12	0	12	175,672	193,784	197,330
Wisconsin	6	6	1	7	190,949	182,374	160,045
Minnesota	1	1	0	1			
Missouri	2	2	0	2			
Colorado	5	6	0	6	214,694	198,346	220,209
Oregon	0	0	1	1			
Washington	0	0	1	1			
Total	340	359	83	442	12,582,250	12,724,941	13,478,044.

PRODUCTION OF BITUMINOUS COAL AND COKE PIG IRON.

New York	16	17	2	19	742,949	762,252	859,125
New Jersey	4	4	0	4	113,523	139,984	130,392
Pennsylvania	89	101	5	106	4,981,814	4,876,047	5,270,883
Maryland	4	4	0	4	193,498	191,802	221,145
Virginia	13	16	6	22			
Georgia	1	1	1	2	293,124	257,203	281,092
Texas	1	1	2	3			
Alabama	30	31	13	44	814,440	834,578	846,034
West Virginia	3	4	0	4	136,662	167,872	151,643
Kentucky	4	4	3	7	34,580	61,365	78,423
Tennessee	12	13	5	18	203,035	221,306	193,016
Ohio	56	58	2	60	2,674,137	2,647,546	2,815,174
Illinois	22	24	0	24	1,011,639	1,145,227	1,263,258
Michigan	2	2	0	2	175,673	178,718	158,299
Wisconsin	5	5	1	6			
Minnesota	1	1	0	1			
Missouri	1	1	0	1	235,932	218,592	245,530
Colorado	5	6	0	6			
Total	269	293	40	333	11,611,006	11,702,492	12,514,014

ANTHRACITE AND MIXED ANTHRACITE AND COKE PIG IRON.

New York	1	0	5	5	57,619	115,722	64,853
New Jersey	5	4	3	7			
Pennsylvania	42	37	12	49	705,903	681,442	693,381
Total	48	41	20	61	763,522	797,164	758,234

PRODUCTION OF CHARCOAL PIG IRON BY STATES.

Massachusetts	1	2	0	2	10,218	10,021	8,746
Connecticut	3	2	1	3			
New York	0	0	2	2			
Pennsylvania	1	3	2	5	1,026	1,637	620
Maryland	0	0	1	1	2,727	2,176	517
Virginia	1	0	3	3			
Alabama	1	3	2	5	10,650	15,180	15,737
Georgia	1	1	1	2			
Texas	0*	0	1	1	*11,716	15,302	6,421
Kentucky	1	1	0	1			
Tennessee	1	1	2	3			
Ohio	1	0	5	6	1,675	3,775	0
Michigan	10	10	0	10	137,031	144,337	143,860
Wisconsin	1	1	0	1			
Missouri	1	1	0	1	32,679	32,857	29,895
Oregon	0	0	1	1			
Washington	0	0	1	1			
Total	23	25	23	48	207,722	225,285	205,796

* Includes about 500 tons of pig iron made in Georgia in the first half of 1906 with charcoal and coke mixed. No iron has since been made in this country with this fuel.

TOTAL PRODUCTION OF PIG IRON ACCORDING TO FUEL USED.

Bituminous	269	293	40	333	11,611,006	11,702,492	12,514,014
Anth. & anth. & coke	48	41	20	61	763,522	797,164	758,234
Charcoal	23	25	23	48	207,722	225,285	205,796
Total	340	359	83	442	12,582,250	12,724,941	13,478,044

Miscellaneous Pig Iron Statistics.

PRODUCTION OF PIG IRON IN PENNSYLVANIA AND OHIO.

	Districts.	Blast Furnaces. In blast Dec. 31, 1906.	Blast Furnaces. June 30, 1907. In.	Out.	Total.	Production. Gross tons of 2,240 pounds. (Includes spiegeleisen and ferro-manganese.) First half of 1906.	Second half of 1906.	First half of 1907.
Pennsylvania.	Lehigh Valley	20	21	7	28	333,179	311,911	370,941
	Schuylkill "	15	16	0	16	352,599	361,847	408,178
	L. Susq. "	14	14	5	19	334,526	337,768	342,741
	Juniata "	6	7	3	10	106,794	89,719	115,298
	Allegheny Co.	40	42	1	43	2,856,327	2,846,394	2,851,098
	Shenan. Valley	20	21	0	21	1,026,306	920,873	1,054,302
	Miscel. bitum.	16	17	1	18	677,986	688,977	821,711
	Charcoal	1	3	2	5	1,026	1,637	620
Ohio.	Mahoning Val.	17	18	0	18	949,222	987,714	1,097,426
	Hocking "	1	1	0	1	744,139	734,591	812,166
	Lake Counties	11	13	0	13			
	Miscel. bitum.	16	15	1	16	774,734	728,058	720,085
	H. R. bitum.	11	11	1	12	206,042	197,183	185,497
	H. R. charcoal	1	0	6	6	1,675	3,775	0

PRODUCTION OF BESSEMER AND LOW-PHOSPHORUS PIG IRON.

New York and New Jersey	376,271	413,731	467,143
Pennsylvania	3,220,655	3,140,039	3,135,603
Maryland and Virginia	193,498	186,825	220,989
West Virginia, Tennessee, and Kentucky	141,741	200,925	170,826
Ohio	1,927,344	1,942,860	2,045,577
Illinois	817,182	859,640	916,089
Michigan, Wisconsin, and Minnesota	91,190	76,798	76,505
Colorado	117,000	134,819	153,146
Total	6,884,881	6,955,637	7,185,878

PRODUCTION OF BESSEMER AND LOW-PHOSPHORUS PIG IRON IN PENNSYLVANIA AND OHIO BY DISTRICTS.

Pennsylvania.	Lehigh Valley	67,122	80,025	64,788
	Schuylkill Valley			
	Lower Susquehanna Valley	267,184	289,016	254,443
	Allegheny County	1,904,927	1,882,391	1,876,784
	Shenango Valley	712,010	610,118	638,495
	Miscellaneous bituminous	269,412	278,469	301,093
	Charcoal	0	20	0
Ohio.	Mahoning Valley	710,597	741,246	889,668
	Lake Counties	601,843	587,658	602,064
	Hanging Rock bituminous	73,849	51,781	55,712
	Miscellaneous bituminous	541,055	562,175	498,133

PRODUCTION OF BASIC PIG IRON, NOT INCLUDING CHARCOAL IRON.

New York and New Jersey	118,536	145,411	114,438
Pennsylvania—Allegheny County	845,780	874,059	881,274
Other counties	831,351	811,132	943,939
Virginia and Alabama	267,379	302,593	250,590
Ohio, Illinois, Missouri, and Colorado	386,229	436,204	480,895
Total	2,449,275	2,569,399	2,671,136

PRODUCTION OF SPIEGELEISEN AND FERRO-MANGANESE.

Pennsylvania	105,117	90,708	121,813
New Jersey, Maryland, Ill., and Colorado	55,716	48,959	50,862
Total	160,833	139,667	172,675

PRODUCTION OF ALL KINDS OF PIG IRON FROM 1902 TO 1906.

States.	Gross tons of 2,240 pounds. 1902.	1903.	1904.	1905.	1906.
Massachusetts	3,360	3,265	3,149	15,987	20,239
Connecticut	12,086	14,501	8,922		
New York	401,369	552,917	605,709	1,198,068	1,552,659
New Jersey	191,380	211,667	262,294	311,039	379,390
Pennsylvania	8,117,800	8,211,500	7,644,321	10,579,127	11,247,869
Maryland	303,229	324,570	293,441	332,096	386,709
Virginia	537,216	544,034	310,526	510,210	483,525
North Carolina					
Georgia	35,410	87,255	75,686	38,699	92,599
Texas					
Alabama	1,472,211	1,561,398	1,453,513	1,604,062	1,674,848
West Virginia	183,005	199,013	270,945	298,179	304,534
Kentucky	110,725	102,441	37,106	63,735	98,127
Tennessee	392,778	418,368	302,096	372,692	426,874
Ohio	3,631,388	3,287,434	2,977,929	4,586,110	5,327,133
Illinois	1,730,220	1,692,375	1,655,991	2,034,483	2,156,866
Michigan	155,213	244,709	233,225	288,704	369,456
Wisconsin	273,987	283,516	210,404	351,415	373,323
Minnesota					
Missouri					
Colorado	269,930	270,289	151,776	407,774	413,040
Washington					
Total	17,821,307	18,009,252	16,497,033	22,992,380	25,307,191

A STEEL FOUNDRY FOR LUMBER MACHINERY CASTINGS

The increasing use of steel castings as a substitute for gray iron in heavy duty machinery, has been marked by development of the best machinery practice of recent years. The Prescott Co., Menominee, Mich., manufactures a wide line of saw mill and logging machinery, a class of equipment generally receiving extremely hard service and whose distribution invariably is over thinly populated districts. The desirability of having castings in machinery of this character that would insure against the shocks and strains incident to cutting logs into lumber for the market is evident. The company, alert to meet the demands of its trade, found it difficult to secure steel castings of satisfactory quality, and was further harassed by slow deliveries. To remove these objections and to insure a uniformly reliable product for its requirements, it decided to go into the casting of steel for itself.

Flexibility of operation was a paramount requirement in determining the type and capacity of the furnace to be installed, and investigation was made of a number of plants before a decision was reached. Eventually, the 5-ton basic, open-hearth, tilting furnace, using crude oil for fuel, manufactured by the Wellman-Seaver-Morgan Co., Cleveland, was decided upon, and a plant of this kind has been installed and is now in operation. It is the only basic open-hearth foundry in the upper peninsula of Michigan. The furnace has a capacity of 25 tons daily, and the foundry is equipped to produce castings ranging from 15,000-pound pieces downwards. A heat can be poured every four hours at an expense of 45 gallons of oil per ton of steel produced. Elastic in operation, the furnace has proven to possess the additional good features of being economical and clean. There is almost a total absence of gas, smoke, sinders and dirt usually attendant upon foundry operations, and working conditions are always highly satisfactory.

The furnace, located in the southeast end of the building, on the side adjoining the stockyard, is 31 feet over all by 8 feet in diameter. The hearth is 16 feet long by 5 feet 9½ inches wide. The post ends are 7 feet 7½ inches wide by 5 feet 10½ inches long. The regenerative chambers are 6 feet wide, 12 feet long and 10 feet 3 inches high. The regenerative chambers are enclosed in a sheet steel shell binding, said to be a great improvement in preserving the life of the brick over the ordinary I-beam and buckstay binding, more commonly

FIG. 1—MACHINE SHOP.

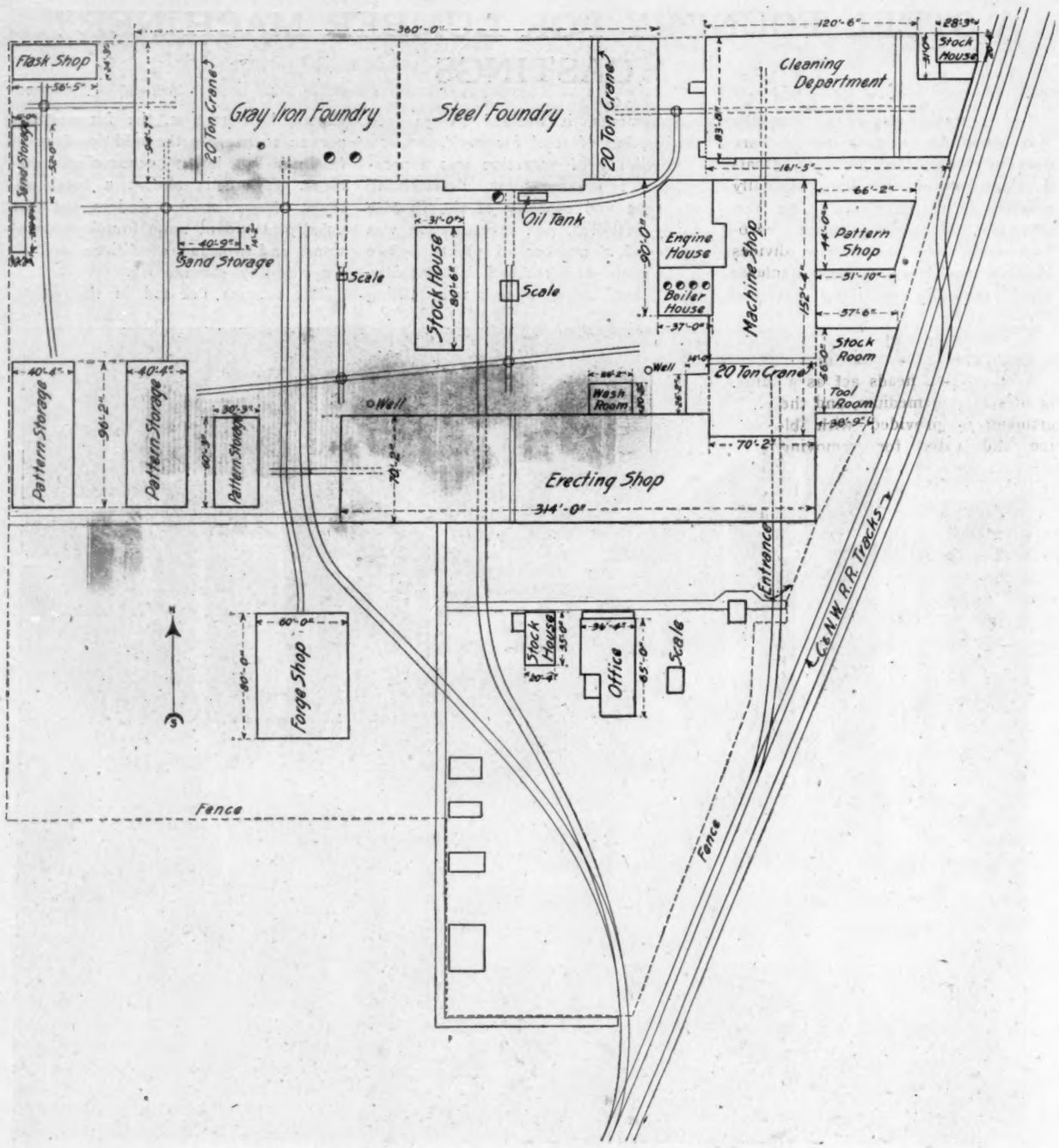


FIG. 2—PLAN OF THE PRESCOTT CO. PLANT, MENOMINEE, MICH.

used. The flues are provided with a Foster patented water seal reversing valve, operated by hydraulic pressure. The spout is 6 feet long. Two solid concrete abutments support the furnace, their foundations being 5 feet below the floor line. At this level, 10 inches of concrete have been laid to prevent the seepage of water into the floor of the foundations. The furnace is tilted by hydraulic pressure, and has a tilting piston 49 inches between high level and low level. It moves on roller bearing rollers, these provided to allow easy operation and to prevent the lining from jarring loose. The pump supplying the pressure was furnished by the Platt Iron Works, Dayton, O. Its controlling valves are located at one end of the tapping platform, within easy reach of the operator. The charging platform is 12 feet above the floor line; 28 feet wide, and 50 feet long. The tapping platform is 3 feet above the charging platform. The furnace is hand charged, but it is proposed to put in a charging machine when the second furnace is installed, provision for which was made when the present plant was designed. An important feature of the furnace is the removable port ends, which allows the use of a spare end which may be bricked up and rolled into place as soon as the burnt out end is removed, thus causing a minimum amount of delay.

Compressed air is the atomizing agent of the oil. Vaporization is accomplished in a chamber at the end of the feed line, a 700-cubic foot Ingersoll-Rand compressor supplying the blast. The oil is entered and heated in a No. 3 double pumping system,

installed by the National Supply Co., Chicago, before delivery to the reversing valves. This apparatus is designed to automatically pump and deliver any quantity of filtered oil within its capacity under uniform pressure and temperature. It consists of a battery of duplex steam pumps, specially brass fitted for oil, and a cast iron receiver tested to 200 pounds hydrostatic pressure. A partition divides the receiver into two compartments or chambers. Projecting into the rear chamber and screwed to the partition are tubes with fine gauze heads, accessible through the rear head of the receiver. These heads act as a filtering or straining medium, and the compartment is provided with blow-off pipe and valve for removing any sediment or extraneous matter deposited therein. The forward chamber, usually carried two-thirds full of water, contains a coil of pipe through which live steam or exhaust steam from the operating pump flows. In action the oil is discharged through the pressure chamber of the pumps into the forward chamber. The oil flowing through the hot water becomes heated to about 200 degrees and passes out through an inner tube to the place of consumption. A cylindrical storage tank, of 12,000 gallons capacity, filled by gravity, is located outside and parallel with the building, the oil being drawn by suction from this tank into the circulating system. The burners are located at each end of the furnace and operated alternately.

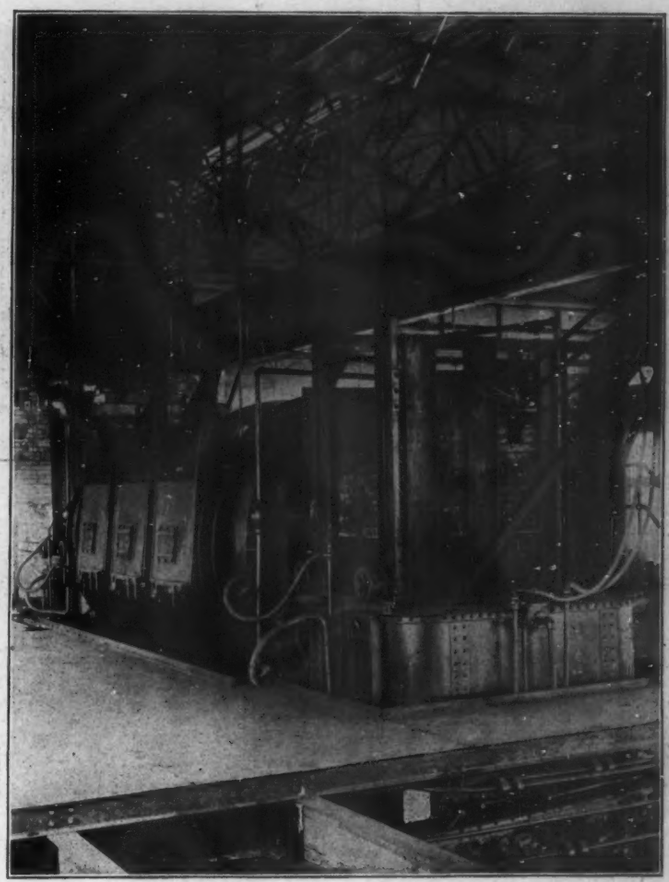


FIG. 4—REAR VIEW OF OPEN-HEARTH TILTING FURNACE SHOWING CHARGING FLOOR.

Melting material is raised to the charging platform by an incline starting from the stockyard, the cars being hauled by an electrically operated cable. A scale is conveniently located at the foot of the incline, and as the buggies are filled they are elevated and placed in front of the furnace. By this arrangement the cost of hauling has been reduced to a minimum.

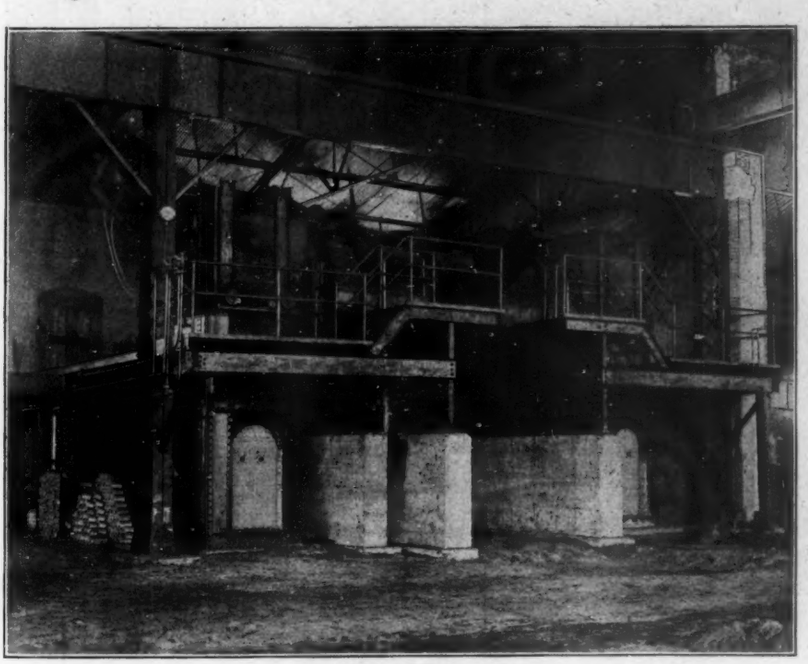


FIG. 3—FRONT VIEW OF OPEN-HEARTH TILTING FURNACE.

The steel foundry adjoins the gray iron foundry, the two departments comprising one building, under one roof, as shown in the ground plan and in the side elevation. The steel furnace and the two cupolas in the gray iron foundry, as well as the brass foundry and the core ovens for all departments, are located in the bay running the entire length of the building. The tapping side of the furnace and cupolas open into their respective molding floors, the latter being each 180 feet long by 62 feet wide, and separated by a brick wall a couple of feet high. The building is served by two 10-ton electric traveling cranes, built by Pawling & Harnischfeger, Milwaukee, one for each department. The crane runways extend the full length of the building, and if necessary the two cranes can be brought together to assist in the pouring of metal or in the removal of heavy castings, flasks, etc. Three wall hoists installed by the Quincy, Manchester & Sargent Co., Chicago, of 2,000 pounds capacity each, are used

FIG. 5—GRAY IRON FOUNDRY.

FIG. 6—INTERIOR OF STEEL FOUNDRY.

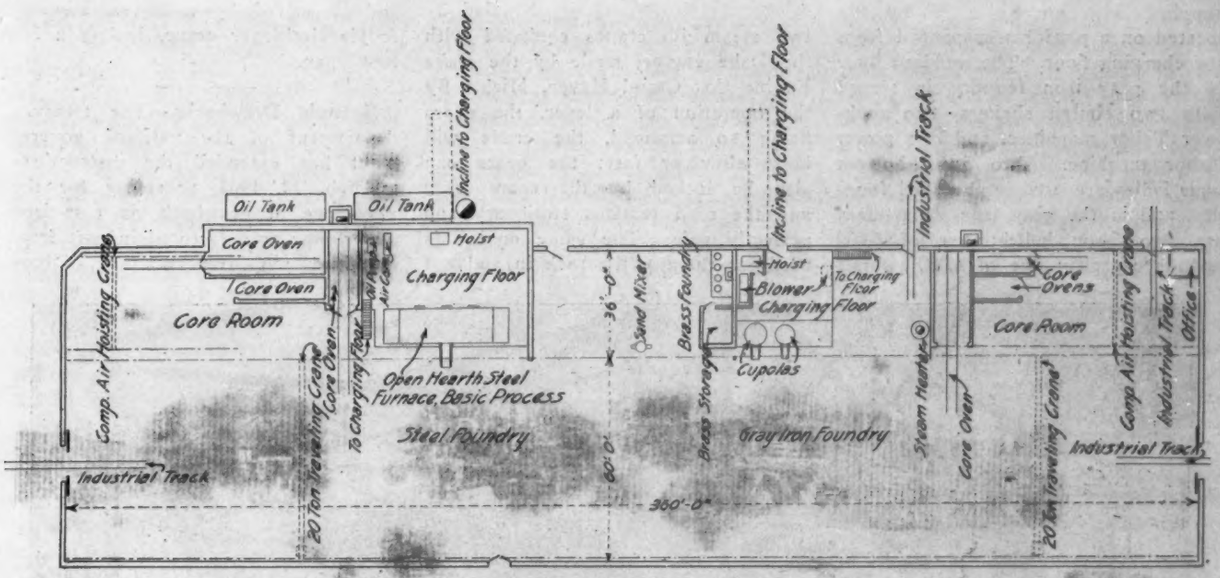


FIG. 7—PLAN OF FOUNDRY OF PRESCOTT CO.

for handling flasks, molds and small work. A metal saw made by the same company is also used in the steel foundry.

An excellent feature of the building is the splendid ventilation and natural light afforded by its structure. The height from the molding floor to the peak of the roof is 48 feet, and to the roof trusses, 32 feet. The building is 360 feet long, and including the bay, is 94½ feet wide. The bay is 32 feet wide. Windows are spaced a few feet apart, the dimensions of those on the sides of the building being 16 x 5 feet; on the eaves, 6 x 5 feet; and on the ends, 10 x 5 and 16 x 5 feet.

Three core ovens have been provided for the steel foundry, two opening into the core room and one into the foundry. All are heated with coke fires. The largest of the three opens into the foundry, and this is equipped with a truck 16 feet long by 5 feet wide. One of the remaining two is for medium-sized cores, and will accommodate a truck 12 feet long by 5 feet wide. The smallest oven is equipped with shelving and is used exclusively for small cores. The floor of the core-making room is laid with cement. Cores for the gray iron foundry are made at the opposite end of the building. One of the specialties in gray iron is a chilled roller for saw mill work, the chills and setting of cores being done with the aid of the Quincy, Manchester & Sargent air hoist, traveling on a hand crane spanning the bay. The same hoist is used to charge the core truck into the oven and to withdraw the same, this being done by attaching a snatch block to the truck end and the hoist. The gray iron core drying room has three compartments, one 14 x 9 feet; one 12 x 16 feet; and one 12 x 22 feet. The latter is served with a truck 14 feet long. A Wadsworth core machine is used in making small cores.

The cupolas are of Whiting make, one being of 25 tons capacity, and the other 15 tons. The charging platform is 16 feet above the molding floor, and, as in the case of the steel foundry, melting stock is elevated by means of an incline, operated by an electric cable. One of the unique uses to which this cable is put when not in use hauling cars, is to operate the weight of the drop in the stock-yard for breaking large pieces of metal. It is also used to unload scrap from railroad cars. All that is done, is to connect the incline cable and the cable attached to the drop or the gripping tongs, with a snatch block. This novel arrangement saves two machines and greatly facilitates unloading of cars or the breaking of metal.

The blast for the large cupola is furnished by a No. 4 Root blower driven by a 20-horsepower Westinghouse motor; the smaller cupola is

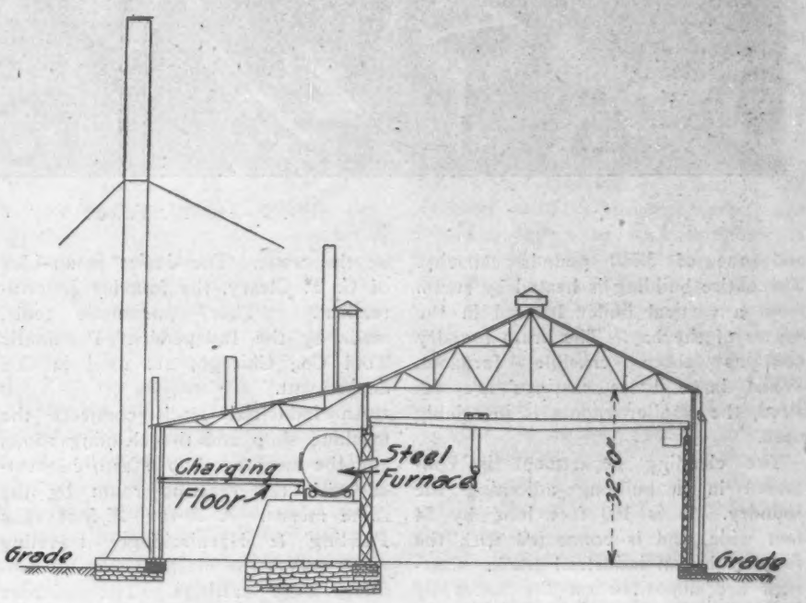


FIG. 8—CROSS SECTION OF FOUNDRY OF PRESCOTT CO.

supplied with air by a No. 4 fan located on a platform suspended from the charging floor. The molding floor in the gray iron foundry is served with two Hanna shakers, two rock-over Tabor machines, and one power Tabor machine. Two 5-ton bottom pour ladles are used in the steel foundry, and in the gray iron department are two 5-ton ladles; one of 6,000 pounds capacity; one of 4,000 pounds and one of 3,500 pounds capacity. The entire building is heated by steam from a vertical boiler located in the center of the bay. The brass foundry contains three crucible furnaces. When large brass castings are desired, the smaller cupola is invariably used.

The cleaning department is contained in a building adjoining the foundry. It is 160 feet long by 84 feet wide, and is connected with the foundry by an industrial track. Castings are deposited on the latter by the crane in the steel foundry, and in the cleaning room are handled by two steam jib cranes equipped with the Dake engine, made by the Dake Engine Co., Grand Haven, Mich. By the operation of a lever, the gears being so arranged, the crane will hoist slow or fast; the gears can also be locked by the same lever and the road remains stationary and perfectly safe. The same engine is used for running the rack in and out on the crane. The device is an idea of G. T. Cleary, the foundry superintendent. "Thor" pneumatic tools, made by the Independent Pneumatic Tool Co., Chicago, are used in this department.

An industrial track connects the machine shop and the cleaning room, and the machine shop is also connected with the erecting room by the same means. A 20-ton, 25-foot span Pawling & Harnischfeger traveling crane serves the machine shop in handling large castings. The machine shop is 152 feet long by 70 feet wide, and is served by a 20-ton Pawling & Harnischfeger crane, having a 38-foot span.

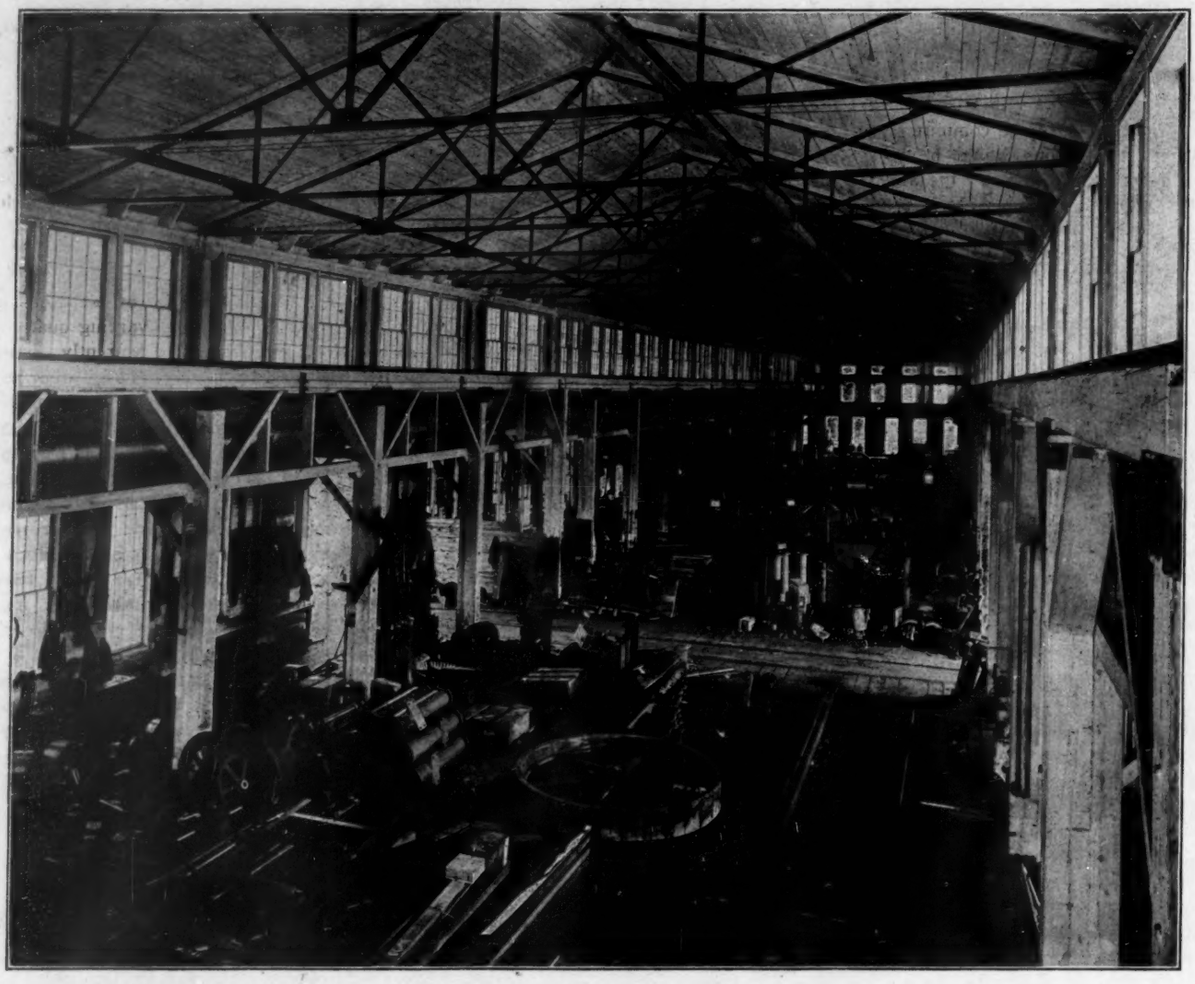


FIG. 9—ERECTING FLOOR.

Extends Drawbacks.—The treasury department of the national government has extended the instructions of Feb. 12, 1903, providing for the allowance of drawback on cast iron water pipe manufactured in part from imported pig iron by the William Cramp & Sons' Ship & Engine Building Co., Philadelphia. A similar provision was made for the pipe and other castings manufactured by M. J. Dummond & Co., New York city.

The furnace of the Atikokan Iron Co. at Port Arthur described in a recent issue of THE IRON TRADE REVIEW was blown in successfully on Tuesday, July 16. The furnace is working on the magnetite ore from the mine of the Atikokan Iron Co., about 100 miles from Port Arthur.

WHAT CONSTITUTES COST OF PRODUCTION.[1]

By F. E. Webner.[2]

The above is a question which seems easy of answer, yet strange as it may appear there is not one manager in ten who has a well defined, clear-cut idea on this subject in which all of the cost elements are given proper consideration. Many associations of manufacturers are endeavoring to have their members get closer together in the matter of cost finding, as, for instance in agricultural implements, foundries, machine tools, etc. The uphill work which is experienced by the members of the committees in the various associations would be ludicrous if it were not so serious; the arguments put forward by some of the membership regarding individual items of costs are in some instances grotesque.

A newly organized selling concern having a duly patented special machine but having no particular sentiment about its affairs will very naturally cast about for the shop which can turn out the best product for the least money, or, all things considered, which can make the most attractive offer. With an independent shop making the machines for the selling concern, the machines are acquired by either delivery on to their store room floor or held on the shipping room floor subject to orders for shipment to the final purchaser. The flat cost of such machines is not necessarily the cost of production for the selling concern, although seemingly so; concretely the matter of patent costs and patent litigation costs enter into the calculation, as such costs are in no wise a matter of commercial expense. And so it is, the deeper into the subject one delves, the more there appears points for argument and reasons for differences of opinion. In the abstract the costs to which the selling concern is put in the promotion of its business affairs are almost entirely those of a commercial nature and, therefore, the idea of a concern having its goods produced outside its own domain gives us a fitting example for comparison.

Unless a sentimental longing for a factory seizes the management the concern will continue to "farm out" its product just so long as the product is right and the conditions surrounding the production are right and, although the cost may be to some degree in excess of what might seem a possibility under other conditions, yet the selling concern more often than otherwise will put up with the higher price rather than to be burdened with the worries and numerous vexations and ofttimes the heartaches that beset the management of a factory business. Incidentally, such heartaches are not usually calculated in the cost of production, though they properly should be, for the cost is there. When the selling concern arrives at a point where it cannot promptly fill its orders through inability to get the goods from the supply house, then, and usually not until then, does it seriously contemplate a change in its plans by the taking on of responsibilities in the way of a factory, so that in the fulness of time, it, like others before it, is brought face to face with the cost of production enigma.

Manufacturing being a conversion of assets from one state to another, requires that originally cash or its equivalent shall be transformed into the three prime producing elements, namely, material, labor and expense. The first step is to prepare a place to work. If such a place is created, then cash or its equivalent is converted into real estate and plant. Interest on this investment is a proper charge against the forthcoming product; it costs that much to be in possession of the plant, just as it would cost for rent were the plant not owned. The next step is to acquire machines to work with and a power plant to operate them, through the means of a fitting power transmission system; after which come small tools and the numerous etceteras necessary to factory equipment. All in turn require a conversion of assets (or possibly the taking on of liabilities which, incidentally, is credit and is to be followed, presumably, by the necessary conversion of assets) and become investments to be properly classed as such on the concern's records. Interest on these investments is a proper charge against product. The next step in the program is to acquire a stock of material sufficient in quantity to be ready for quick calls upon it in anticipated volumes and even for emergencies. In a going concern goods are contracted for and frequently stored up far in excess of immediate needs, in order that certain market conditions may be met. Interest on the mean average of store room accounts is a fair charge to product.

The highways and byways are then searched for good men and, too frequently does it happen that the very shops of competitors and even friends are invaded and good men captured under promise of some kind or another and by dint of strategy and of perseverence a force is finally secured. Novices may think that one could stand on a street corner and call out for men and get them in plenty, but that is not so just at this time when jobs are going begging.

Being now equipped with the two vital physical elements of production, material and labor, and a proper preparation made for the third, manufacturing expense, the concern is in position to start the intermingling of the elements by introducing factory orders and creating a new account called "Goods in Process."

Here we are down more closely to our subject matter. Material, the first element, presents little ground for argument as naturally all the provided material appears to go into product; not all does, however, as oftentimes material will be diverted to channels other than goods in process—possibly sold, stolen or spoiled and oftentimes used in plant construction or betterments. There should be a sharp line drawn as between goods in process and manufacturing expense items and, incidentally, with as sharp a system of records as is possible for material, there will always be a variation of weights and measures, which in cost finding must be considered.

The wood department of a machine shop has to deal with a varying quantity in cost finding. An apparently hard proposition, which serves very well as an example just here is a means of determining lumber cost per foot on goods in process. The wood shop order can be made in three sections, the first or left hand portion being the lumber yard record of grades, measurements and prices; the center portion being the shop order showing cutting sizes, quantities, etc.; and the right hand portion the cost department record for net footage used, the actual cost, per thousand feet, the extension, etc. The modus operandi is to charge to the wood department all such lumber as shall be issued to it, including the inventory on hand at the beginning of each period. All lumber, being cut to advantage, as a matter of course, will have workable scrap left at times; when such scrap is used to cut orders out of, then no lumber record is made with the order sheet but merely a memorandum that it was cut from scrap, stating size, etc., if desired. At the end of each period an inventory can be made of the workable scrap at the cost price per thousand and when such inventory is deducted from the total charge against the wood department for the period, then will result the actual cost for lumber used. Against this can be applied the selling price of all scrap disposed of for kindling wood. The cost department having summarized the total net footage of the sizes and shapes produced, can thereby determine the actual cost per thousand feet of product applying and extending such cost in all the shop orders for that given period.

This illustration is given as a broad example of how more material might be charged than actually was consumed on the particular order; also it shows why in other ways the material element

[1]Eleventh of a series of articles on "Cost Keeping."
[2]Certified public accountant, Cincinnati.

really costs more than, superficially, it might appear to. Material is not exempt, by any means, from weakness in possibilities of accurate cost finding and might well consume all the space allowed for this article, but we are to consider briefly the other elements as well. Next comes labor; not, however, that phase of it which treats of walking delegates and the evils of unionism, and yet the subject of this article cannot entirely divorce that phase, for those features enter into costs to a degree and in these piping times of peace we see charges for "Strike Defense" on the cost records of even the most liberal minded men and managers, who do not expect strikes. Labor is divided into two classes, called productive and non-productive. Non-productive labor is fully as essential to the product as is productive labor, and the term "non-productive" is a decided misnomer. However, without debating that point, non-productive labor constitutes in some plants the major portion of the manufacturing expense. Aside from losses of time through carelessness, shiftlessness and perhaps inadequate supervision, the direct or productive labor element is comparatively easy to determine, and we may, therefore, pass on to the expense element or burden, which to the cost clerk is the thorn in the flesh. With the supposititious concern under consideration, there is as yet no selling expense to consider, hence the product can, in the reader's imagination, be stored up to the ridge poles of the warehouse before sales are considered, and, incidentally, the costs up to that point are production costs and any charges whatever after that point will become purely commercial. If the management of a given concern desires to load onto product the cost of handling from storehouse to cars, crating, boxing, etc., it is, of course, his prerogative, but in any event, such charges ought to be kept so separated as to be readily discernable but not loaded on the production cost through the burden rate or constant. An example in point is agricultural machinery which runs by calendar seasons, entirely, and long before the selling season the warehouses will be filled to overflowing and not much if any shipping charges incurred. But later on the shipping charges will be greatly increased, and it must become potent to the reader that such shipping costs are in no wise a fit and proper charge against so small a portion of the season's output as happen then to be in process of construction.

Certain classes of manufacturing expenses are clear cut in their distinction from commercial expense, while others require careful adjustment in the apportionment between the two classes.

Perhaps the problems most difficult in solving in the expense element are the suspense and reserve items, and of the two the least difficult are the suspense items. It is unfair and unreasonable to take items like insurance where the costs are paid in advance for a year and sink such cost into one period when the cost belongs over twelve months' time; the proper and just way is to apply one-twelfth portion (if on a calendar month basis, or one-thirteenth portion, if on a four-week period basis) to each period. That is accomplished by holding the amount paid in suspense and charging each month with its proper proportion as time proceeds. This plan presents no difficulties, as it is a known amount that is being dealt with; the seemingly difficult proposition, however, is when such costs must be anticipated, as for instance, taxes, law costs, experimental work, factor of safety, variation of weights and measures, maintenance, depreciation, etc. And they must be anticipated on some basis or other, else costs shall not have been arrived at, and if, by any possible chance, the actual costs on these items have been deferred until the end of the year, then, unless cognizance has been taken through reserve accounts, the product of the first and middle of the year will have been at a ridiculously low figure. Just as positively as that depreciation must sometime be absorbed, just so positively must it be considered in the periodical burden. When reserves are maintained, then the actual costs, as they are incurred, are chargeable against such reserve account, rather than being again charged to manufacturing expense. Maintenance and depreciation are both just and proper charges against cost of production. The periodical estimate for the former can be based on past experience; the latter, however, presents a wide field of argument as to how much should be charged in the aggregate each year; many good mechanics differ on that subject, but let it be enough rather than too little, as the reserve created does not in any way decrease, or in any way affect the worth of such assets.

Cincinnati machine shops are much interested in the co-operative work of the Cincinnati university course in engineering. The second of these co-operative classes was formed and enrolled last week. Nearly 60 young men will undertake the course this year. This is double the number that began last year. About half of them are from Cincinnati and its immediate vicinity, the balance coming from various parts of the United States, as far west as Idaho and as far east as Connecticut.

SOME LATE IMPROVEMENTS ON COMPRESSIVE RIVETERS AND OTHER TOOLS.[1]

By Chester B. Albree.[2]

Compressive Riveters.

In compressive riveter work there are two or three types which are quite familiar, the oldest type being the straight hydraulic machine invented by Tweddel in England, and later on, the pneumatic riveter by Allen of New York, who was perhaps the first to make it a success. Later came the hydro-pneumatic riveters. With the hydro-pneumatic riveter we have been making some experiments, and it was found to be advisable for several reasons, notably for greater economy of air, simplicity of construction and better action, to try to improve the methods that had been in use. In driving rivets the pressure required differs from punching materials in that in punching, the greatest pressure comes at the beginning of the stroke, when the punch comes down on the material. In riveting, however, especially hot riveting, the easiest work is when the die first strikes the rivet and the greatest pressure is required to finally form the head. That being the case it can readily be perceived that a constantly increasing pressure would be the theoretically correct pressure to drive rivets. This pressure is most easily obtained by means of the toggle joint, which theoretically gives an infinite pressure with an infinitesimal movement at the end of the stroke. In practice, of course, we do not get an infinite pressure; but, as most riveters are of horse shoe or yoke type, the limit pressure is the yielding point or the bending point in the yoke. In straight toggle joint machines the general idea is shown in Fig. 1.

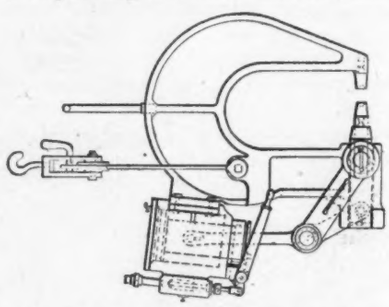


Fig. 1—Ordinary Toggle Riveter.

In practice we find that when the cylinder has made seven-eighths of its stroke the pressure line of the rivet dies rises up to about 15 times the pressure in the cylinder. By that time we would have traveled within about 1-16 inch of the

[1] A paper presented before the Engineers' Society of Western Pennsylvania.

[2] President Chester B. Albree Iron Works, Pittsburg, Pa.

final stroke of the machine, and beyond that point the probabilities are that there would be spring in the yoke. If we made the yoke strong enough not to spring at all, it would be so heavy as to be utterly unmanageable. So it is only necessary that deflection should not occur at a pressure below that necessary to drive the rivet. Hence in the toggle joint arrangement we have the best possible arrangement for driving rivets.

But there are certain drawbacks in the practical application of the toggle pressure. The principal one is that its stroke is absolutely fixed. It never varies for a given leverage. In riveting you are liable to have 1 inch or 2 inches, or maybe only ½ inch thickness of plate and in order to have the maximum pressure just as the die comes to the surface of the plate it is necessary to adjust the distance between the die and the point of maximum pressure by means of a screw actuated by hand. In work that does not vary it makes little difference, but in ordinary structural work, and boiler work, you have constantly to drive rivets through different thicknesses of material, and each time it will be necessary for the operator to adjust the screw. That requires a certain amount of skill, and if it is not done correctly the chances are that you will not drive the rivet sufficiently tight, if you do not close it with maximum pressure.

To overcome this difficulty of adjustment the hydro-pneumatic machine was devised, which is nothing more nor less than a hydraulic intensifier. The ram alone gives a very small but powerful motion, and it is necessary in riveting to have clearances, in order to go over angles, stiffeners, etc., so it is desirable to have a longer stroke. Of course we do not need high pressure over a longer distance than, say 1¼ inches. The question then was how to get a clearance movement. This was accomplished by putting a little extra cylinder below the air cylinder. The air pressure acting on its piston forces liquid into the ram cylinder at low pressure, and by this means we get three or four inches of preliminary adjustment.

The objections to this form are: in the first place, it is difficult to pack; and second, that in order to get two inches of die motion with a maximum pressure of 50 tons, it requires a 15 to 20 inch stroke in the air cylinder, and a very high pressure throughout this stroke in the ram cylinder and plunger cylinder; sufficient for the final closing pressure, thus wasting power. The practical advantage is that it does not require skilled workmen to adjust the dies; they adjust themselves. It occurred to us that we might get the desired toggle joint effect and yet have an automatic adjustment, and what I desire to bring out is the device for the accomplishment of this, which may be of interest to you.

In Fig. 2 is shown our first attempt and also our perfected form. As far as the toggle joint action goes it is practically the same as the first machine described. The pressure from the toggle, in the first form of machine, is transmitted from the large area of the plunger to the top of the ram and also through a pipe to the adjusting cylinder. The ram being smaller in area and free to move, advances more rapidly than the plunger and continues until the rivet die on its extension strikes the projecting rivet. As the plunger continues, the pressure in the cylinder is limited by the pressure due to the spring in the adjusting cylinder, which is only 20 pounds per square inch, insufficient to upset the rivet beneath the ram. Hence the liquid will now displace the piston in the adjusting cylinder, the ram remaining stationary. As soon, however, as the projection on the plunger enters the ram cylinder the full toggle pressure is transmitted through the incompressible liquid to the ram, forcing down the rivet, and the differential area above forces the remaining liquid in the large plunger bore, into the adjusting cylinder.

During the downward motion of the ram the liquid beneath it is forced into the opposite end of the adjusting cylinder, against the spring pressure. It is obvious that the ram may move its whole adjusting stroke, or not at all, up to the time that the projection on the plunger enters the smaller area; after which the further travel of the ram is that of the plunger, until the ram meets opposition greater than the pressure of the toggle, when it will stop. This arrangement, therefore, automatically adjusts the point of maximum pressure to suit the work. On the return stroke we have the direct pressure beneath the ram, as well as the suction of the plunger, to raise the ram to its original position.

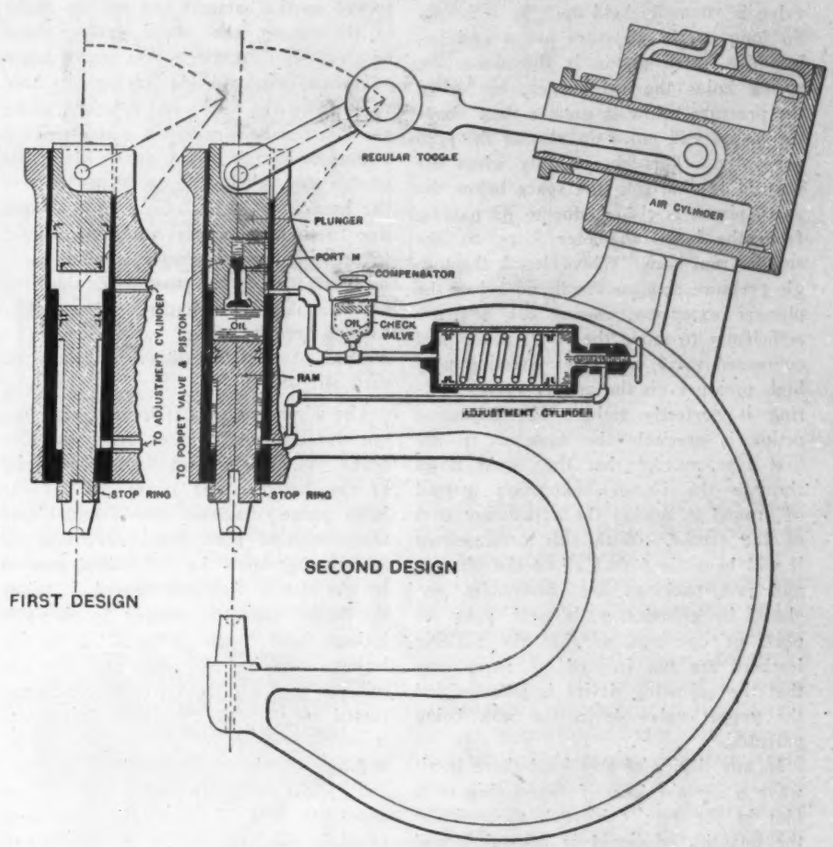


FIG. 2—FIRST AND SECOND DESIGN OF ALBREE RIVETER.

Theoretically this design was correct, and it worked very well indeed for about two strokes. At the end of the second or third stroke our packing was gone and we have found it impossible to hold the pressures. The trouble lay in the fact that we put cup leathers at the end of the plunger, and when the cup leathers entered the chamber, the moment the pressure rose to a high point it tended to cut the leather right out. So in order to make the device practically, as well as theoretically successful, it was necessary to devise some scheme to have

the leather cups, which hold better than any other hydraulic packing, move always surrounded by the walls of the cylinders, and pass no ports whatever. To do this and yet allow the liquid to pass freely from the upper to the lower part was rather a difficult proposition. We accomplished it in this manner.

Referring to the later form in Fig. 2 it will be noted that the extension of the plunger, when fully up, projects into the smaller area of the ram cylinder; and that cup leathers are used to pack it. In the interior of this extension is a valve of the poppet type, but having a stem carrying on its end a small piston. This valve is normally held open by a spring. So long as the pressure above and below this small piston is the same, the spring holds the valve open, but when the pressure below is greater than above the piston will move up, closing the poppet valve. This occurs only when the port M leading into the space below the small piston is closed, due to its passing from the large diameter bore to the smaller ram bore. When closed, the toggle pressure acts on the liquid below the plunger extension, raising the pressure sufficiently to move the small piston and connected valve, and later exerting very high pressure on the poppet valve, shutting it perfectly tight. The adjusting action is precisely the same as in the first type, except that the liquid flows through the plunger extension instead of around it, during the adjustment part of the stroke. With this arrangement it will be noticed that all of the plunger and ram packings are continually enclosed by cylinder walls and pass no ports or openings, so that the packing leathers are not injured. I would say that the adjusting device is patented and the poppet valve device is now being patented.

In any device of this kind there is always a certain loss of liquid due to a film in the ram (although theoretically the quantity of liquid is constant) and in the course of a little while there would be a partial vacuum inside and pressure on a cavity would not give good hydraulic pressure on the rivet. It was therefore necessary to provide a constant source of supply of the liquid, so arranged that when the pressure rose in the confined liquid it would not blow out, but when there was a vacuum in the system additional liquid would run in.

This loss of liquid is made up from a small storage, or compensating cylinder, full of liquid, having a piston with a spring behind it, connected to the larger bore of the plunger by a pipe, having a check valve in it. Whenever there is pressure in the plunger cylinder the check valve remains closed; but when the toggle is fully back, and the piston in the adjusting cylinder is against its cylinder head, so that no pressure due to its spring is exerted on the liquid, any loss of liquid will tend to create a vacuum in the plunger cylinder, and then the check valve will open and oil flow out of the compensating cylinder, under the pressure of the spring acting in its piston, to replace that lost.

Pneumatic Hammers.

We have been working on pneumatic hammers and we have now perfected a hammer in which there are one or two novel features. In pneumatic hammers of nearly all makes, one of the sources of trouble has been that if the workman picked up the hammer and put his finger on the trigger when there was no chisel or rivet set in it, the piston would begin to reciprocate, and not having any tool to strike at the lower end it would strike the cylinder head; and in a matter of a minute or two it would smash the piston or cylinder. About 75 or 80 per cent of the breakages of pneumatic hammers are due to the carelessness of the workmen in pressing on the trigger when there is no work to do. In other words the little piston strikes the cylinder head with disastrous results. We have devised a method of obviating this trouble that is very simple.

The admission port is located near, but not at the end, of the larger cylinder bore. When no tool is placed in the end of the hammer the lower end of the large piston diameter passes and closes the admission port, thus preventing air from acting upon the differential area to lift the piston. Any compressed air below the large diameter escapes by a small leakage port to the exhaust; and this leakage port is only open when the admission port is closed. In hammers actuated by valves exterior to the piston, it seems impossible to use this device, and attempts have been made to mechanically close such valves, but they do not appear to be very successful. The same effect is obtained, but at the expense of loss of air, when the leakage port is designed to open when the piston is at the extreme end of the stroke, but does not close the admission port. Patents are now pending for these improvements.

This very simple device is very effective. One can pick up a tool and with 100 pounds air pressure in the pipe, put a finger on the button, opening the throttle, and it will not start unless the tool is fully in place, whereas with all other tools that I know of, the moment the trigger is pressed the tool begins to work, and it is only a question of a few minutes until it is good for nothing.

A Special Riveter.

Another machine that has a feature of interest was built for some special work. The work to be done was the riveting of some concrete mixers, they being in the shape of two cones placed together. The problem was to reach into a very limited space and drive the rivets. It had been done by hand and something was wanted which would be a little quicker than the pneumatic hammer and something which would give tighter rivets, and be a power machine. It was necessary to have a reach of some 50 inches and we had an extremely small opening. At the same time it was necessary to be able to adjust for different thicknesses of material, and to give what we call an alligator motion to the jaws of the machine. The ordinary riveter could not be used for this work.

To secure adjustment of the projecting alligator jaws of the machine, we inserted a screw carrying the trunnions of the fulcrum on one end—a hand wheel, with thread in the hub, serves to raise or lower the screw—thus adjusting the distance between the ends of the jaws as desired, and at the same time not interfering with their clearance or action.

We also designed a special carriage to hold the double cones, rendering it unnecessary to raise either riveter or cones, but only to revolve the cones on their axis.

I might also mention a horizontal method of riveting boilers. We made a wheeled truck carrying on its bed three sets of rollers running in the opposite direction. We suspended from a trestle a riveter large enough to do boiler work, from a bail attached through a system of sheaves and tackles to a counterweight of one-fourth the weight of the riveter and having four times the travel. Then all that was necessary to do was to have a small chain block on the trestle to overcome the friction of the sheaves and tackle. In that way we could raise this machine with a chain block for any diameter of boiler.

We have in very successful operation a machine with a ten-foot six-inch gap, weighing about 25,000 pounds. We are now installing several other machines of this character and it seems to be quite a feasible plan. It has several advantages over the ordinary Tower system. It takes up very much less room and the initial cost of installing the plant is very much smaller. This system requires no hoisting of the boiler, as it is simply rolled on the floor or on the rollers. Thus the power plant of the machine is limited to that necessary to actuate the toggle.

Furnaces Blown In.—The blast furnaces of the Atikokan Iron Co., Port Arthur, Ont., were blown in July 17. The construction of the furnaces has involved a capital expenditure of $1,300,000. To maintain a sufficient ore supply about 100 men are employed at the mine.

THE HARVEY ANTHRACITE PRODUCER GAS PLANT.

In the last five years many gas producers, especially of the suction type, have been put on the market in this country and are working satisfactorily with a continuous load. Gueldner, the foremost German authority on gas-power questions, predicted a few years ago that the future improvements of the gas producer would be in the line of a regulable water and steam supply and more thorough scrubbing.

These requirements are stated to be fulfilled by the Harvey gas producer, manufactured by the Industrial Gas Co., of New York, which has a number of installations running satisfactorily.

An installation of this type, as shown in the illustration, consists of a producer, economizer (evaporator), water regulator, wet scrubber, dry scrubber, and an exhauster, by means of which a part of the gas produced can be transported to gas furnaces of suitable construction, being used there for fuel purposes, while the gas engine is taking the amount of gas required by suction. The main features distinguishing this type from other makes are the special construction of the economizer, of the water regulator and of the wet scrubber.

The illustration shows the economizer containing a spiral water coil. The water is fed into this from an automatic regulator at the bottom, and is discharged at the top of the spiral passage. As it travels downward it is converted into steam by radiation from the hot gas in the inner tank and is picked up by the up-coming air.

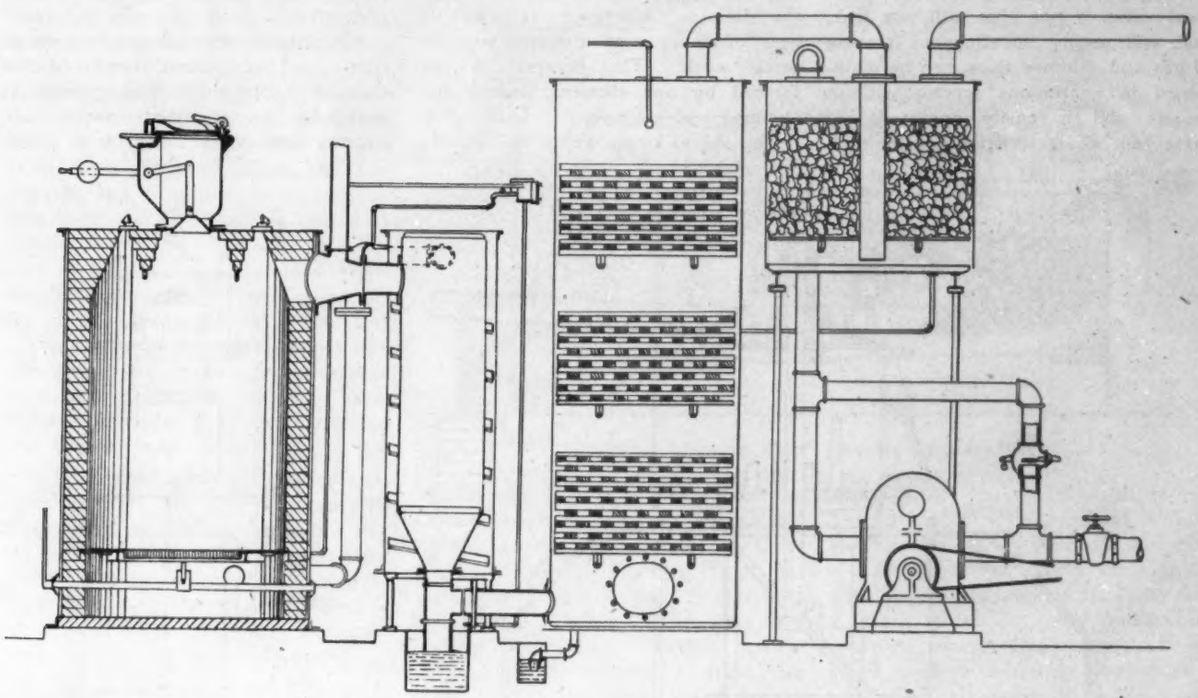


FIG. 1—THE HARVEY ANTHRACITE GAS PRODUCER.

The water regulator is used in connection with the water supply for generating steam in the water coil economizer. It is a device which regulates the flow of water into the economizer in accordance with the amount of gas being made. The regulator is connected by an equalizing line to the air inlet of the generator. Its action is positive and automatic and the device is of durable construction and simple design. By this means a uniform quality of gas is secured and a uniform temperature of the generator effected. The wet scrubber of this producer plant is generally filled with wood checkers instead of the usual filling of coke. It is of ample size and heavy construction.

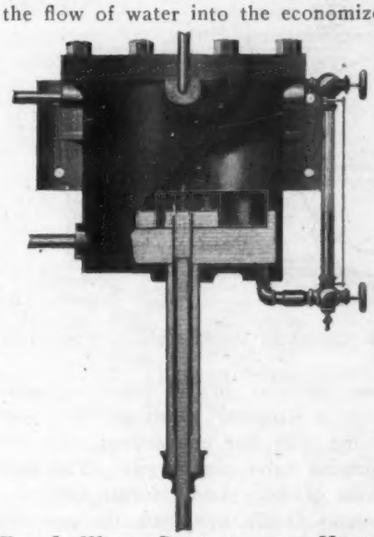


FIG. 2—WATER REGULATOR FOR HARVEY ANTHRACITE GAS PRODUCER.

In connection with large plants for which steam must be generated in the economizer, in place of the water coil economizer, regular boiler construction is used, embodying water-tubes or fire-tubes, according to the character of the available water. In connection with the supply of steam from the water and fire-tube boiler economizers, an automatic steam regulator is used. The steam in the economizer is carried at a slight pressure. From the economizer the steam is taken off in a pipe and introduced through the air supply line into the generator. In this steam line is located a diaphragm valve controlled directly by air pressure from a thermostatic air chamber located in the gas outlet and exposed to the hot gas as it leaves the generator. As the temperature of the gas depends largely upon the amount of steam introduced into the fuel, the temperature can be used to control the supply of steam. This is done directly by the expansion and contraction of the air in the thermostatic chamber and in this way the gas is kept automatically of a uniform quality.

THE FISCHER REVERSING VALVE FOR GAS-FIRED FURNACES.

One of the most vital details of gas-fired furnaces is the gas controlling or reversing valve. The ideal valve is one that will not leak, that will permit simultaneous closing of gas and chimney flues, can be maintained in continuous service without repairs and is easily operated. If these four characteristics can be realized in a valve without troublesome complications it is obvious, that improvement will result in an increase in production and a decrease in fuel consumption.

The Fischer reversing valve here illustrated and described is designed to meet the above specifications, and the successful use of the valve for four years has demonstrated it to be constructed on correct principals.

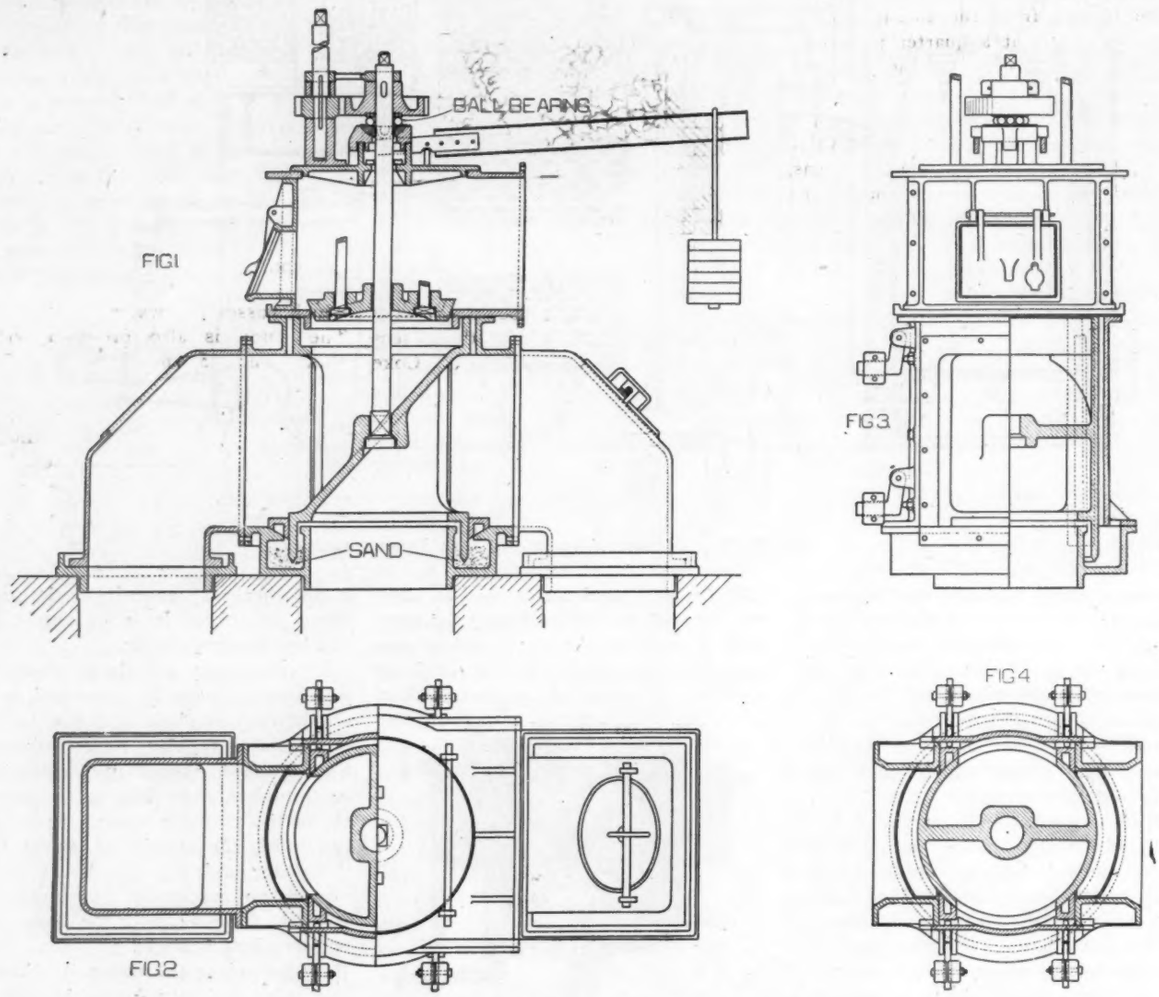
The prominent features in the design are: It can be installed in the place of most of other design of valves without any change in the arrangement of flues. No water is used for sealing or cooling, which, when in contact with the gas, not only tends to cool it but to add to it more or less vapor, which is carried into the furnace, where it reduces the heat efficiency and disintergrates the brick work. The reversal is performed by one element, and is mechanical and positive.

The valve, as shown in the illustration, consists of an inner cylinder with a diagonal partition, an outer casing with flue connections, like the Siemans valve, and a pan. The partition of the cylinder forms two continuous canals, one from the gas flue to the furnaces, and the other from the furnace to the stack. A half turn of the cylinder reverses the flow of the gases.

The cylinder is sealed above by the pressure against the rim of the gas box, contact being maintained by the balance weight. At the bottom the rim dips into the packing of sand or asbestos which fills the pan. At the circumference the leakage of gas is prevented by sealing strips and segments pressed against the surface by counterweights, as shown by the plan view.

All these joints are permanently tight, as the counterweight makes them self-adjusting. The cylinder is suspended by its shaft on a ball-bearing and floats freely, thus allowing liberally for expansion. Warping is therefore not detrimental to the effective action of the valve, for owing to the method of salf-packing there is no chance for the gas to escape either during reversals or while at rest. The maker states that this seal will not break down under the most adverse conditions nor in spite of the hardest pushing of the producer.

The loss of gas by leakage directly to the stack, is totally avoided in the Fischer valve by purely mechanical



FISCHER REVERSING VALVE FOR GAS FIRED FURNACES.

means which are simple, automatic and continuous in their action, regardless of the position in which the valve is set.

The second characteristic of the ideal valve is one of great importance. Unless the furnace and chimney are disconnected when the gas is shut off, cold air is drawn through the furnace, chilling the heat and cooling the brick work. The loss occasioned by the reduction in temperature is more pernicious than is usually considered. The valve, here described, closes the passage to and from the furnace simultaneously, and at a quarter turn both flues are shut off. See Fig. 4. The heat in the furnace is retained, while the flues hold enough gas to supply the ports. Turning further, the valve opens at the other side and the gas, which in the meantime has been accumulating in the producer flue, rushes in with increased pressure and fills the ports instantly.

The benefits of the simultaneous closing device are also apparent for longer periods for gas shut-off. For example, while making bottom and during Sunday rests, the furnace is kept hot for the reasons already given, and starts up quickly again.

The valve is substantially built, with heavy castings especially provided to meet the severity of steel works conditions. Parts exposed to the extreme heat are made from a special grade of cast iron found after many experiments to withstand the heat excellently. The strong construction combined with the feature of unhindered expansion reduces the repairs to a minimum. Some of these valves have been in hard and constant service for three years without any repairs or renewals.

Ease of operation is assured by the ball-bearing which carries the rotating parts, and by the fact that jamming, sticking or gaping is made impossible through the floating and self-adjusting arrangement. The reversal is performed by hand with little effort, and expensive hydraulic and electrical appliances are unnecessary.

The results obtained in the use of the Fischer valve are claimed to include a fuel economy amounting in some cases to 20 per cent; a largely increased production owing to continuous heating; long life to the furnace owing to the even temperature maintained in the brick work, and low expense for repairs and renewals.

These valves are built in all sizes by the maker—the Taylor-Wilson Mfg. Co., Pittsburg—who is the licensed maker for the United States.

AN APPARATUS FOR WATERING COKE OVENS.

The accompanying illustrations show an apparatus for watering coke ovens invented by D. B. Stauft, of Scottdale, Pa., and which is in use by the H. C. Frick Coke Co., the Oliver & Synder Steel Co., the Orient Coke Co., the Taylor Coal & Coke Co. and others. The object of the invention is to provide a convenient and effective means for watering and cooling the coke in beehive ovens preparatory to moving it from the oven. The invention comprises a sprinkling apparatus, which may be introduced through the oven door into the oven, so as to lie over the coke bed and which is constructed so that it will automatically revolve above the coke and thoroughly sprinkle it. The inventor also provides a means for manually turning the sprinkler. The arrangement of the sprinkling pipe is such that the water is confined to the bed of coke and is not allowed to spray over the walls of the oven, as the sudden cooling of the walls would tend to destroy them.

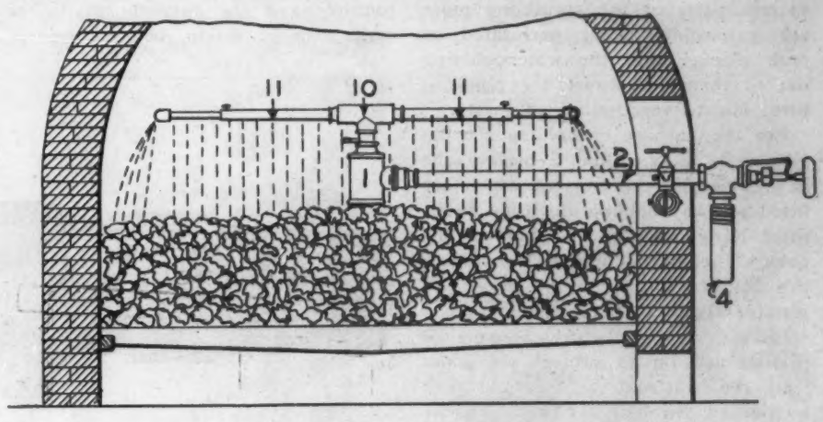


FIG. 1.—STAUFT COKE WATERING APPARATUS.

Fig. 1 is a sectional view of the oven showing the sprinkling apparatus in use, while Fig. 2 is an enlarged sectional view of the sprinkler. The reference numbers are the same in both illustrations. The apparatus comprises a central casing 1, to which a rigid metallic pipe 2 is led for conducting the water into the central casing. At the outer end of this pipe, there is formed a union 3 into which passes the water supply pipe 4. The union is also provided with a stuffing box 5, in which is mounted a shaft 6, passing axially through the pipe 2 and carrying on its outer end a hand wheel or other means for operating it. A spring catch 7 engages with a notch in the shaft 6 and when this notch is engaged, the shaft is held in its operative position. When released the shaft may be drawn outward into an inoperative position, viz., opposite to that shown in Fig. 2. The inner end of the shaft 6 is held to turn and to slide by a spider bearing carried by the inner end of the pipe 2.

In the upper end of the body is fitted a bushing in which is arranged to turn the whole pivot 8 of the sprinkling pipes. This pivot is held against axial movement by means of a locking device at a point within the casing. The pivot 8 is perforated, so that the water may enter this pivot from the casing and just below this perforated point a pair of bevel gears 9 are located, one being attached to

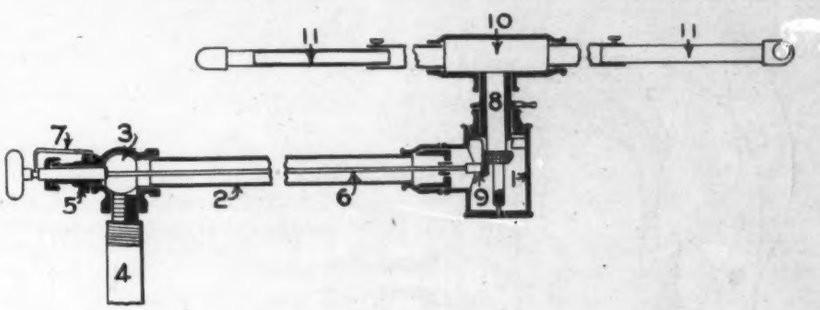


FIG. 2—DETAIL OF STAUFT COKE WATERING APPARATUS.

the pivot and the other to the shaft 6 and in mesh with each other. The upper end of the pivot 8 carries a tee 10, to which are connected the sections 11 of the telescopic sprinkling pipes. The outer sections terminate in lateral adjustable extensions. The various parts of the sprinkling pipes are extensible, being perforated in such manner that the water passing out of them will cause the pipes to turn, due to reaction of the water.

For the purpose of holding the device while in operation, a bridge tube is provided, in the ends of which are fitted screws enabling the tube to be fitted horizontally in the door of the oven. The main pipe 2 is fastened to this bridge tube by means of an adjustable clamp.

In use, a light water pressure is first turned on to protect the pipes from the heat and the device is then introduced through the door of the oven, the bridge tube placed in position and the main tube clamped to it. An increased supply of water is then provided, causing the sprinkler tubes to revolve around the pivot 8, sprinkling the coke in all portions of the oven. If the water pressure is not sufficient to rotate the sprinkling tubes, or if it is desired to manipulate them more rapidly than can be done by the water pressure, the hand wheel on the end of the shaft 6 may be used. By means of this apparatus the coke is effectively and quickly cooled, and when the operation is finished the device may be withdrawn from the oven by reversing the operations required to introduce it.

A NEW "DAYTON" CHIPPING HAMMER.

The accompanying illustration shows a new chipping hammer recently brought out by the Dayton Pneumatic Tool Co., Dayton, O. The Dayton riveters and chippers are all made on the long stroke principle and are distinctly similar to each other in design, both as regards outward appearance and internal arrangements of parts. A description of any single one applies to the entire line.

By the long stroke principle is meant the arrangement whereby a piston can be made to travel a greater distance than its own length. This is not possible if the ports by which the piston controls the valve are so arranged in the valve block and cylinder that their openings into the cylinder must always be covered by the piston and only placed in communication with each other through an annular groove or its equivalent in the piston. This arrangement is commonly known as the short stroke and in riveters and other tools where a 6 to 9-inch stroke is required a piston from 7 to 10 inches or more in length is necessary. Besides being heavy and making it necessary to have a long cylinder a piston of this length has considerable inertia to be overcome by the air pressure before it will start in either direction.

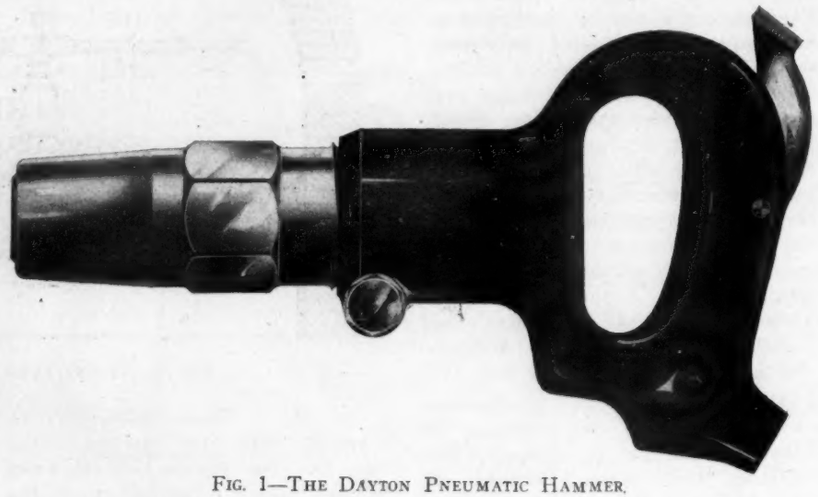


FIG. 1—THE DAYTON PNEUMATIC HAMMER.

It is argued by the Dayton Pneumatic Tool Co. that the difference in the blow struck by a piston weighing two pounds and another weighing one pound is of no account when both are impelled by a pressure of between 75 and 100 pounds per square inch. The company argues that a difference in diameter of the piston of from 1-16 to ⅛-inch will cause a greater difference in a blow than will a few ounces more or less in the weight of

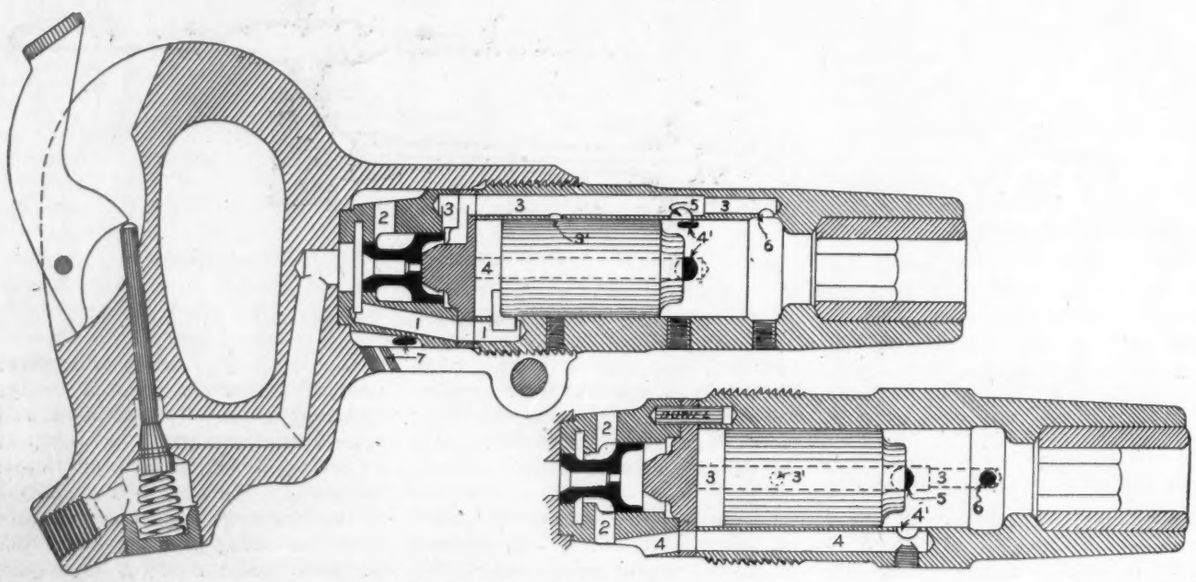


FIG. 2—THE DAYTON PNEUMATIC HAMMER.

the piston. As an illustration the new Dayton chipping hammers shown herewith may be cited. All of these excepting the smallest (No. 1) have the same piston 1-1-16-inch diameter by 2½ inches long. The difference in size is only the difference in length of stroke, and yet there is a marked difference in the force of blow in any two sizes, owing entirely to the increased momentum which the piston acquires in traveling each additional inch.

On this account a chipping hammer made on the long stroke principle can be made considerably shorter and lighter than one made on the short stroke principle without losing any of its effectiveness. In addition the advantage is obtained of requiring less pressure in the front end for the return stroke, thereby effecting a quick return and a rapid stroke with an economical air consumption.

The operation of the Dayton hammer is as follows: Referring to the illustration, Fig. 2, the air enters the valve block through the central opening in the handle, drives the valve before it and holds it down on its seat, thus closing the opening through the center of the valve. The several inlet ports 1 will now be open and conduct air into the back end of the cylinder, whence it propels the piston until within ⅛-inch of the striking point. The piston then uncovers the port 3' and the air flows into the port 3 filling the chamber in front of the piston and also the space in the valve block under the large end of the valve seat. The valve areas in this tool are 0.30 square inch at the small end and 0.60 square inch at the large end and the pressure applied to the large end moves the valve against the pressure in the small end until the valve seats against the handle and is held there. Live air will now pass through the small hole in the center of the valve through the port 3, and as the piston by its rebound has closed port 3', it will pass to the front end of the cylinder through the port 6 and drive the piston back toward the handle. The valve in moving against the handle has also established communication between the ports 1 and 2 in the valve block, thus permitting air to enter back of the piston exhaust through the holes 7 provided in the handle. When the front end of the piston uncovers port 5, the momentum which the piston has acquired is enough to carry it back against the valve block cover and the air in the front end of the cylinder is exhausted from the ports 4 back through the valve block into the exhaust chamber and ports 7. This, of course, also carries away the air through the port 3 from the large end of the valve block much faster than air can enter through the small hole of the valve, thus reducing the pressure under the large end of the valve. Consequently, the constant pressure on the small end will drive the valve before it and hold it on the seat on the valve block cover, closing the passage through the valve. This completes the cycle of operations.

The hammer is simple on construction and of few parts. It is also stated by the makers to be as effective and economical with the use of air as it is possible to be made.

June's Steel Exports.—The port of New York established a notable record during the month of June in handling 34,335 tons of the total steel tonnage of 38,641 exported by American mills during that period. The record of other Atlantic ports was Philadelphia 2,439 tons and Baltimore 1,867 tons. Included in the June exports were 19,021 tons of steel rails, 2,422 tons of steel billets, 9,045 tons of wire, nails and pipe, 4,200 tons of structural, 1,300 tons of bridge material and miscellaneous products.

A NEW 4-FOOT RADIAL DRILL.

The accompanying illustrations show a new radial drill designed and built by the Mueller Machine Tool Co., Cincinnati. The machine is provided with 24 speed changes to the spindle and eight changes of automatic feed for each spindle speed. These speeds can be changed while the driving belt is in motion and without noise or shock and the action is absolutely positive. The speed changes are accomplished by means of a speed box shown at the base of the column in Fig. 1, the two long levers in front controlling four changes of speed. One speed is all that can be changed at a time, the small locking lever between the two long ones preventing any different practice.

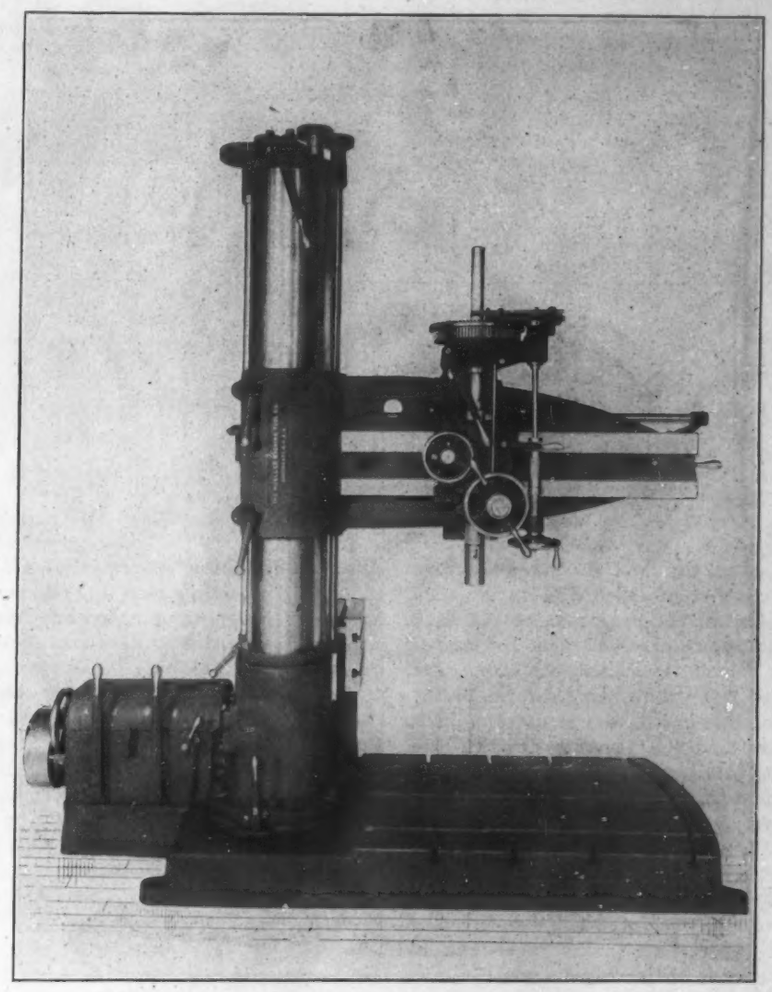


FIG. 1.—MUELLER 4-FOOT RADIAL DRILL.

The drawing, Fig. 2, is a section of the speed box gears, shafts and friction clutches, which are operated by the long levers before mentioned. The driving shaft drives the intermediate shaft, which, in turn, transmits motion to the upper shaft of the

speed box, which is geared to a shaft in the column. The small lever at the right of the speed box, as shown in Fig. 1, is used to bring the gears D, E and F, Fig. 2, in mesh with the proper gears on the intermediate shaft, and three more changes of speed are obtained, which, multiplied by those on the first driving shaft give 12 changes of speed. These are then doubled to 24 by means of the back gears which are located at the top of the column, as shown in Fig. 1. The small lever shown at the base of the column is used to operate the back gears, and this lever is also used to bring the gear on the shaft in the column in mesh with the gear on the elevating screw when desired.

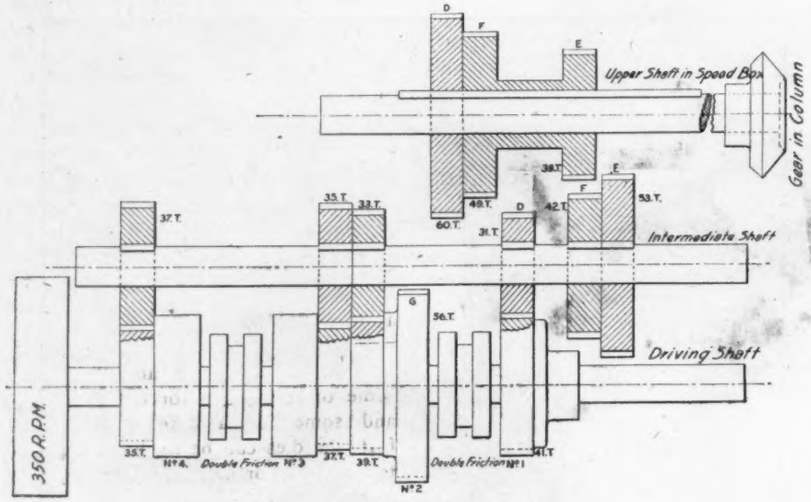


FIG. 2—SPEED BOX OF MUELLER RADIAL DRILL.

When the elevating screw is reversed while lowering the arm of the drill, the gears D and G in Fig. 2 are meshed in the speed box, which causes the upper shaft in the speed box to reverse at an increased speed.

The column is stationary and is of heavy section and made in one piece. It is bolted to the base and cannot revolve. There are four webs, extending its entire length, adding to the strength of the machine and providing for the resistance to heavy strains at any height, particularly when the spindle is extended to its maximum distance on the arm.

The arm is made in pipe section, its upper brace being as close to the head as possible, while the lower brace is on the outer edge. This prevents any twisting tendency of the arm while resisting upward pressure of the spindle when drilling. A top cap resting on roller bearings supports the arm, making a full circle about the column. Both can be instantly locked by fixed binder levers. The arm can be lowered at a speed of about three times as great as the elevating speed by means of a screw, which is provided with ball thrust bearings.

The spindle is of crucible steel ground and counterbalanced. A quick advance and return motion is provided, together with means for taking up wear. Stopping, starting and reversing for tapping is accomplished by means of the long lever shown in front of the head, which operates two self-adjusting, noiseless friction clutches located on the back of the head. When used for tapping, it is impossible to accidentally engage either automatic or lever feed, thus avoiding any breakage of taps. An adjustable gage nut causes the spindle to slip when a tap reaches the bottom of a hole.

FIG. 3—FEED PLATE OF MUELLER RADIAL DRILL.

A positive feed for the drill spindle is provided by the automatic feed when high speed drills and reamers are in use. A friction feed may be used when desirable, the operator making the change from one to the other by simply turning a nut. As shown in Fig. 3, a round plate having eight circles of steel pins is located above the spindle gear, the pins engaging with a steel pinion with involute teeth on the horizontal worm shaft. The speed of this shaft is varied by means of the knob shown below the lower hand wheel. This knob is fastened to a rod, which extends through the center of the vertical feed shaft and which has involute teeth cut on the upper end, engaging a sliding rack to hold the steel pinion in any desired circle for fast or slower speed. These eight changes of feed may be quickly made while the drill is at work. The upper worm wheel has its hub split and by means of a ring nut can be locked to the vertical feed shaft for positive feed, or it can be slightly released if friction feed is required.

The automatic trip is provided with a safety stop, which prevents the feeding of the spindle after it reached the limit of its travel. A graduated bar on the counterbalance weight is set to zero when the drill enters. The bar has several adjustable dogs to trip the feed, as desired, but these do not interfere with the spindle travel. The feed can also be tripped by a lever on the vertical feed rod. Letters and numbers cast near the levers show the operator immediately in what direction to move the lever for proper speeds, this latter being given on a bronze plate fastened to the arm.

THE TILTED TURRET LATHE.

The machine shown in the accompanying illustration has been designed to meet the demand for a screw machine or monitor lathe whose turret will carry tools of sufficient diameter to properly handle the work also to allow short box tools to be bolted to the faces of the turret and still permit a long piece to be machined.

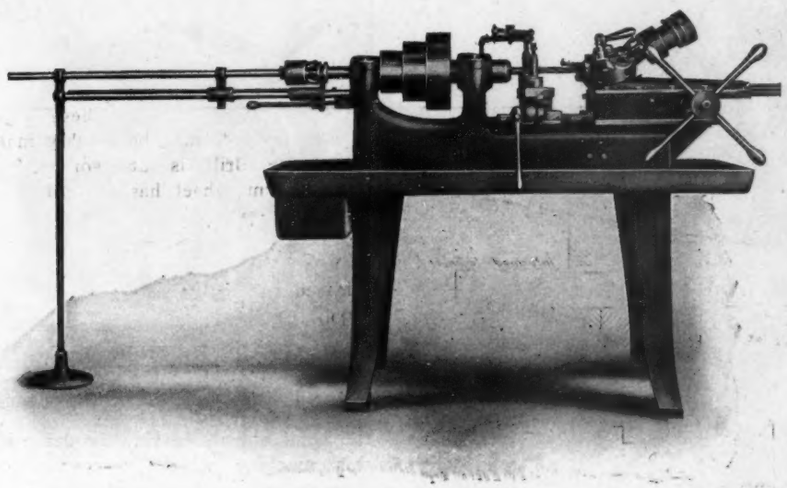
The general design of the machine is shown in the illustration. It is equipped with wire feed and self oiling bearings. One filling of the chamber under the bearing will lubricate the machine for a year. The turret is hexagonal and is fitted with holes and binder bushings for round shank tools, and has its faces square with the spindle for attaching tools. It is mounted on a slide rest at an angle of 15 degrees from the horizontal. By this arrangement a tool when swung over the turret slide is given an angle of 30 degrees from the horizontal thereby permitting the use of a tool two or three times the diameter possible on ordinary turret lathes. The second advantage claimed for the tilted turret, a feature said to be found in

no other machine, lies in the lower row of holes in the turret.

It will be noted from the illustration that the work is arranged to pass directly through the turret and back over the turret slide without interfering in any way with the tool which might be in the back hole or fastened to the rear face.

dle have gibs for adjustment both vertically and cross-wise to take up wear and preserve the turret alignment which is so important in all work of this kind.

The oil-pan is large and cast with a tank in the head-stock end, with a pump to carry the oil to the work. A double cut-off rest is provided having an extra



THE TILTED TURRET LATHE.

This feature is an important one, as long stock may be handled without necessitating a tool with an excessive overhang. It will be further noted that the pressure on the turret is taken up directly on the turret slide which comes nearly on a line with the center of the spindle, in this manner relieving the center post of the turret from undue strain and consequent springing.

Each hole of the turret has an independent stop shown at the rear of the turret slide, and by a new construction these stops are stationary and do not revolve with the turret and so can be easily recognized. The turret slide and saddle long bearing on the bed with adjustable gib on the bed.

The countershaft is of the rim friction type and the friction clutch has but four working parts. Both pulleys and bearings are self-oiling and can be operated for six months steadily without attention.

The machine as shown takes one inch stock through the wire feed and other sizes are now under process of construction at the factory.

The machine is made by the Wood Turret Machine Co., of Terre Haute, Ind., and is being put on the market by Hill, Clarke & Co. Inc., Boston.

THE "PLURALITY DIE" BOLT CUTTER.

The accompanying illustrations show the "plurality die" bolt cutter, built by Mummert, Wolf & Dixon, Hanover, Pa., together with some of the details of this machine. The principal feature of this tool is the die composed of three parts, each having a number of cutting points arranged on the circumference, as shown in Fig. 5, which is one portion of the die. These three pieces are grouped in the die head, as shown in Fig. 4. Each piece has from 8 to 12 points, depending on the size of thread to be cut. The line drawings, Figs. 6 and 7, show dies comprising 8 and 12 points.

With this machine all varieties of threads commonly used may be cut with one or two sets of dies. Should a machine be used for cutting only a few sizes, the points on the dies can be made to cut all threads or some of the points for a certain size and some for a different size. In fact, the dies can be made with points for any assortment of threads and sizes desired. The dies are so made that all points of the same size are interchangeable with each other on the same set of dies, or any point of the same size on the same number die of any set, the number here meaning the number of the die and not the number of points on it.

The die head is simple in construction, as is shown in the sectional view, Fig. 3. There are no intricate parts to become disarranged. The die is held rigid by a tempered tool steel stud which has a notched head on the back, engaging with a corresponding circular rack. The notches correspond to the points on the dies

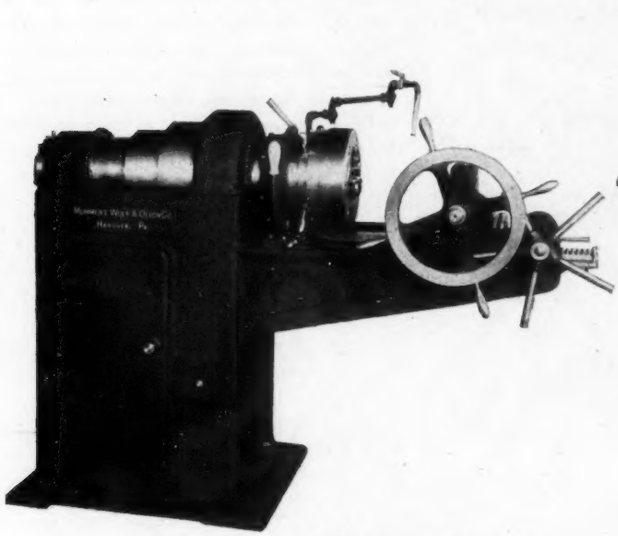


FIG. 1—"PLURALITY DIE" BOLT CUTTING MACHINE, FRONT VIEW.

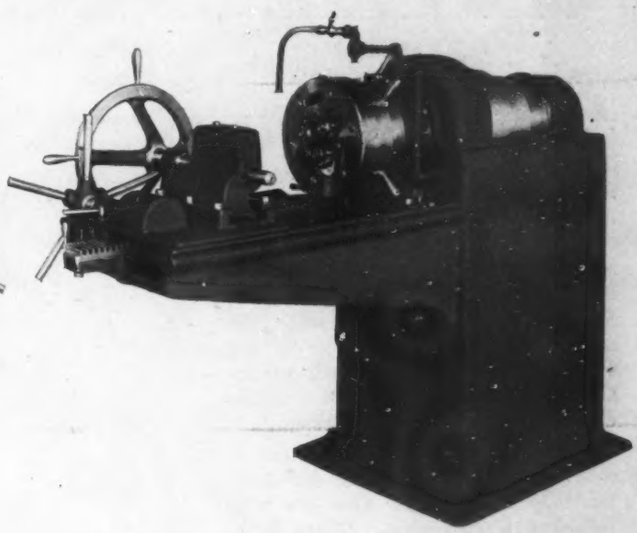


FIG. 2—"PLURALITY DIE" BOLT CUTTING MACHINE, BACK VIEW.

and readily locate the points. When changing from one size thread to another, it is not necessary to remove them from the head. The partly countersunk nut on the face is loosened and the stud pushed back. This disengages the notches from the rack and the die can then be turned until the point wanted is in line with the center of the head. The stud is driven forward by a spring and the nut again tightened. This change can be made very rapidly. The dies can be adjusted while the machine is in motion by turing the 4-handled adjusting ring back of the head. The ring is graduated, thus indexing the amount of adjustment.

A positive automatic throw out is provided and arrangements for automatically closing the dies are also furnished when desired. There is no exposed gearing, the back gearing being suspended beneath the cone pulley in the main case of the machine. The front bearing is long and close to the head. The part of the spindle running in this bearing is tapered and has provisions at the back of the machine to take up wear. The sectional view shows clearly the oiling system and the disposition of the chips. This same illustration shows clearly the construction of the vise and carriage. Plainness, substantiality and simplicity with a minimum amount of parts and small floor space were the chief objects in view in designing this machine which is covered by patents and pending applications.

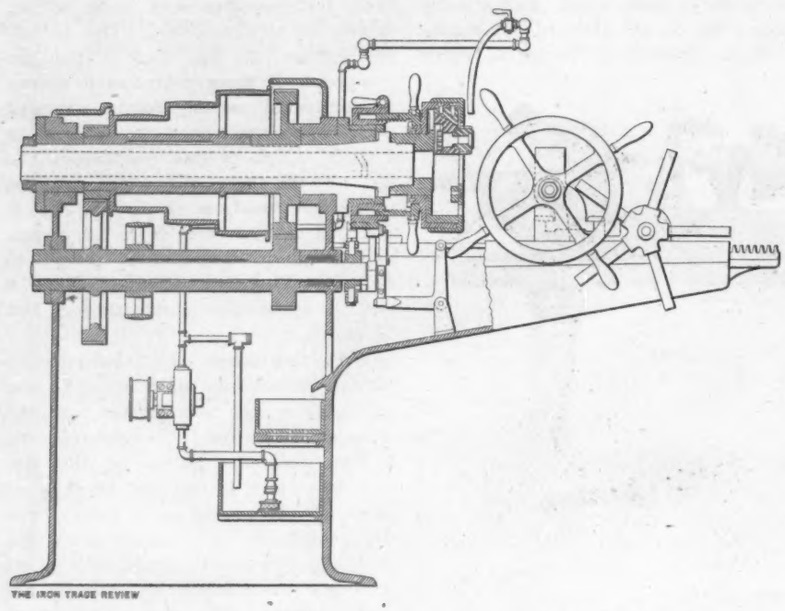


FIG. 3—SECTIONAL ELEVATION OF "PLURALITY DIE" BOLT CUTTING MACHINE.

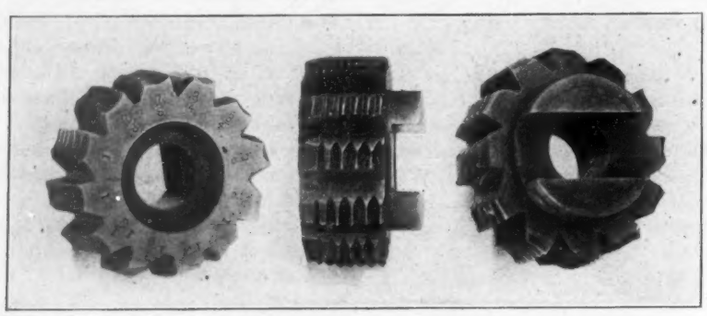


FIG. 5—DIE OF "PLURALITY DIE" BOLT CUTTER.

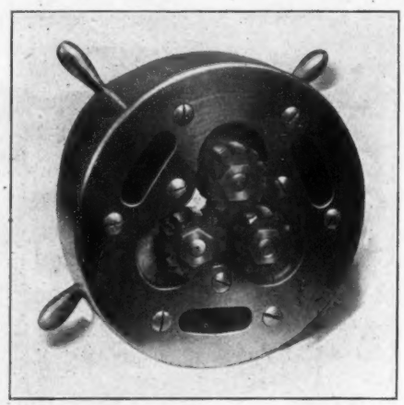


FIG. 4—DIES GROUPED IN DIE HEAD.

THE CLOUSER HIGH-SPEED CHAIN BELT.

The accompanying illustration shows the Clouser high-speed chain belt made by the Link Chain Belt Co., 52 Dey St., New York City. This belt differs from other link belts in that in the ordinary type the chain is driven by sprocket with ouwardly projecting teeth requiring depressions or perforations in each link in order to accommodate the sprocket teeth. In the Clouser belt the teeth or knuckles, as they are called, are on each link, the sprocket containing depressions which receive the knuckles. It is thus possible to use a thinner link in a chain without

CLOUSER HIGH-SPEED CHAIN BELT.

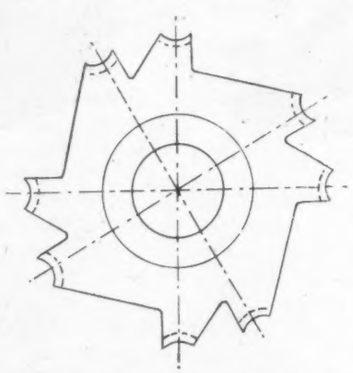


FIG. 6—8-POINT DIE.

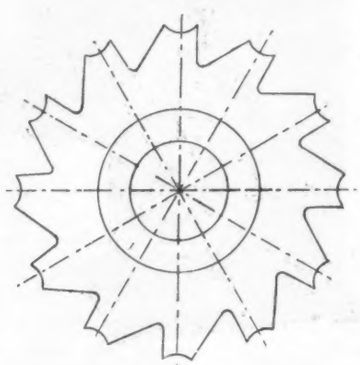


FIG. 7—12-POINT DIE.

Manufacturing expense for each period to be spread over departments on an equitable basis, each classification being dealt with specifically; this can be done by a sheet showing totals of each expense classification with columns for each department into which columns the distribution can be made. Each department therefore having been charged with its proper share of the total expense, the department burden can then be determined.

The following departments are suggested:

1. Casting Cleaning
2. Planing
3. Scraping
4. Turret Machines, Hand and Automatic
5. Lathe
6. Milling
7. Drilling
8. Chasing
9. Grinding
10. Polishing
11. Wood
12. Fitting and Assembling
13. Painting

Production Costs

- A Material
- B Labor (Productive)
  - 1 Time Work
  - 2 Premium Wages
  - 3 Piece Work

Charged Direct to Product

- C Accruing Manufacturing Expense
  - 1 Salaries
    - a Portion of Executive Salaries and Expense
    - b Superintendents and Foremen
    - c Draftsmen
    - d Time and Cost Department
    - e Purchasing Department
    - f Stores Department
  - 2 Non-Producing Labor
    - a Tool Making and Repairing
    - b Tool Boys (Messengers)
    - c Pattern Makers
    - d Millwrights
    - e Inspectors
    - f Carpenters
    - g Painters (Where cannot be directly applied)
    - h Engineers and Firemen
    - i Porters
    - j Truckers
    - k Elevator Men
    - l Packers
  - 3 Rent
  - 4 Taxes
  - 5 Insurance
  - 6 Water, Light and Fuel
  - 7 Pattern Material
  - 8 Packing Material
  - 9 Patent Costs
  - 10 Law Costs
  - 11 Strike Defense and Association Costs
  - 12 Experimental Work
  - 13 Incoming Freight, Express and Drayage
  - 14 Factory Supplies
  - 15 Factor of Safety, Leakage, etc.
  - 16 Miscellaneous Manufacturing Expense
  - 17 Interest
    - a On Investment
    - b On Borrowed Money
  - 18 Maintenance
    - a Factory Buildings
    - b Power Plant
    - c Electric Plant
    - d Shafting, Hangers and Belting
    - e Machine Tools
    - f Small Tools
    - g Jigs and Templates
    - h Shop Furniture and Fixtures
    - i Patterns
    - j Miscellaneous Shop Equipment
  - 19 Depreciation
    - 1 Lathes

Diffused over Product in the form of Burden per Productive Hour

Elements Entering Into
COST OF PRODUCTION
of Machinery

- g Jigs and Templates
- h Shop Furniture and Fixtures
- i Patterns
- j Miscellaneous Shop Equipment

19 Depreciation

- a Machine Tools
  - 1 Lathes
  - 2 Planers
  - 3 Drill Presses
  - 4 Milling Machines
  - 5 Screw Machines—Hand
  - 6 Screw Machines—Automatic
  - 7 Turret Lathes
  - 8 Turret Lathes—Automatic
  - 9 Shapers
  - 10 Slotters
  - 11 Boring Mills
  - 12 Thread Miller
  - 13 Cutter Grinders
- b Small Tools
- c Patterns
- d Jigs and Templates
- e Factory Building
- f Power Plant
  - 1 Engines
  - 2 Boilers
  - 3 Generators
- g Electric Plant
- h Shafting, Hangers and Belting
- i Electric Equipment
- j Shop Furniture and Fixtures
- k Air System
  - 1 Compressors
  - 2 Pipes and Fittings
- l General Equipment Not Specified

Commercial Costs

1 Salaries
- a Executive Officers
- b Salesmen and Advertising Managers
- c Bookkeepers and Clerks
- d Stenographers
- e Janitors
- f Shipping Department

2 Office
- a Rent
- b Light and Heat
- c Supplies and Stationery

3 Advertising
- a Supplies and Stationery
- b In Periodicals
- c Postage

4 Traveling Costs

5 Entertaining

6 Telegraph and Telephone

7 Allowances, Collection Costs and Bad Debts.

8 Depreciation
- a Office Building
- b Furniture and Fixtures

Diffused Over Sales

Supplement to
THE IRON TRADE REVIEW
Cleveland, August 1, 1907

To accompany article "What Constitutes the Cost of Production?" by F. E. Webner, certified public accountant.

decreasing its strength. The teeth or knuckles engage the depressions in the sprocket by rolling instead of sliding contact. This chain may be run as a cross belt upon centers greater than 4 feet by reversing every other link. The construction omits pins and rivets and renders the chain self-cleaning, as dirt is thrown out from the wearing portions during operation and is not allowed to accumulate to the injury of the chain. Flanges are cast on each sprocket wheel, which guide the chain into place so that the tooth on the bottom of each link accurately engages with the depression. This chain has been used upon sprockets revolving as high as 950 revolutions per minute, and has been used for direct driving on motors within 17-inch centers. These chains are made in sizes ranging from ½-inch up to 2 inches in width and can be applied to all kinds of power transmission work, as driving countershafts, concrete mixers, elevators, rock crushers and machines for handling coal, coke, cement, ore, sand and other propositions.

THE WESTINGHOUSE INDUSTRIES AT EAST PITTSBURG, PA.

The Westinghouse industries in East Pittsburg comprise the Westinghouse Electric & Mfg. Co., making all types of electrical apparatus, the Westinghouse Machine Co., manufacturing steam turbines, steam engines, gas engines and producers and auxiliary apparatus, and the Pittsburg Meter Co., manufacturing, mainly, gas and water meters. The total number of persons employed is about 20,000.

The Westinghouse Electric & Mfg. Co. employs about 16,000 persons at the East Pittsburg factory. About 1,000 car loads of raw material are received each month and the outgoing shipments of finished product by freight amount to about 600 car loads per month or 27 per working day, weighing in the neighborhood of 100,000 tons. In addition to this, an average of one car load per day is shipped out by express. These products cover anything from the smallest motors up to the largest generators developing thousands of horsepower. Other apparatus included in the manufactured products are switchboard apparatus, transformers, street railway apparatus, the latter including probably the most interesting machinery at present manufactured by the company, namely, the single-phase electric railway equipment.

FIG. 1—THE WESTINGHOUSE WORKS AT EAST PITTSBURG.

The new east shop was built largely for the manufacture of these locomotives and their equipment. It is over one-third of a mile long and the main aisle has a width of 70 feet. An experimental track about five miles long, fully equipped with the required overhead construction, connects East Pittsburg with Trafford City, and is used for testing the locomotives before shipment.

The total Westinghouse single-phase mileage is 1,000, and contracts involving additional construction have been placed.

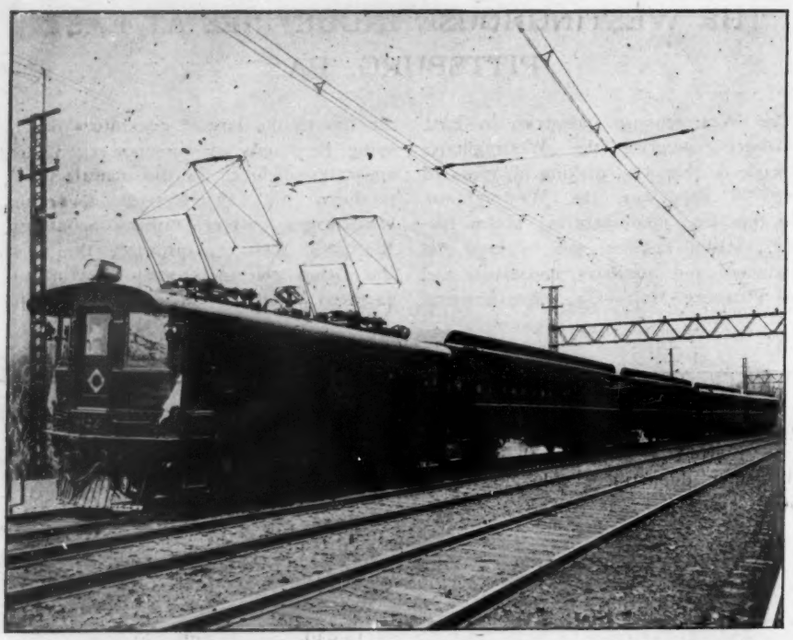


FIG. 2—ELECTRIC LOCOMOTIVE FOR NEW YORK, NEW HAVEN AND HARTFORD RAILROAD.

There have been made 15 installations of single-phase apparatus, the most notable being the installation at New York on the New York, New Haven & Hartford railroad. The trains on this system are operated by electric locomotives for 31 miles out of New York.

This service requires 35 locomotives, each equipped with four motors, having a maximum total of 2,000 horsepower. One of the New Haven locomotives is shown in the illustration, Fig. 2.

Another notable installation is at Detroit where the trains on the Grand Trunk railroad through the Sarnia tunnel under the Detroit river are hauled by electric locomotives for a distance of about 3½ miles. The Spokane & Inland Empire of Spokane, Wash., operates both a freight and passenger service over 146 miles of track. It uses six single-phase locomotives each of 50 tons capacity and eight of 72 tons. One of these locomotives is shown in the illustration, Fig. 3. There are also 15 motor passenger cars of 400 horsepower and six freight express cars of 400 horsepower.

The most interesting products of the Westinghouse Machine Co. at the present time are undoubtedly its steam turbines and gas engines. A Westinghouse-Parsons steam turbine is shown in Fig. 4, direct-connected to a special electric turbo-generator built by the Westinghouse Electric & Mfg. Co. It represents one of the most efficient types of steam generators. Installations of this type are rapidly being made in powerhouses of street and inter-urban railway systems. A notable installation of this type is the powerhouse on the New Haven system above mentioned in which are installed three interurban sets, each of a capacity of 5,000 kilowatts.

The Keystone Steel Casting Co., Chester, Pa., manufacturing steel castings up to 1,000 pounds in weight of McHaffie and crucible steel, announces that these departments are now in full operation and reports a large number of orders booked.

FURNACE PROJECT

For Utilizing Indiana Ore Being Considered.—Industrial Notes.

(Special Correspondence.)

Indianapolis, Ind., July 27.—No little interest is being manifested in a proposition to manufacture pig iron in Greene county, near Linton, where it is held that this product can be manufactured very cheaply, due to the fact that all materials are contiguous. Iron ore and limestone are plentiful in the county, but until recently no adequate method of transportation was available. A railroad is now being completed touching the rich ore fields. Greene county is rich with ore, limestone, timber and water and in view of this it is expected that Linton can be made a manufacturing center. The ore is red hematite and it is said can be mined and delivered at $1.50 and $2 a ton. Pure carbonate of lime is present in such quantities in the same localities that it is said it can be delivered for about $1 a ton. W. S. Blatchley, state geologist, says the average assays of the ore show 38 per cent pure iron and that with modern machinery this could be worked at a profit.

The Atlas Engine Works has completed a large motor truck for use in its yards and it is rumored that the company will eventually add motor truck manufacturing to its business.

Fire almost completely destroyed the plant of the Masch Foundry Co., Warsaw, Ind., July 15. It is believed that the fire was caused by an incendiary. The loss was estimated at

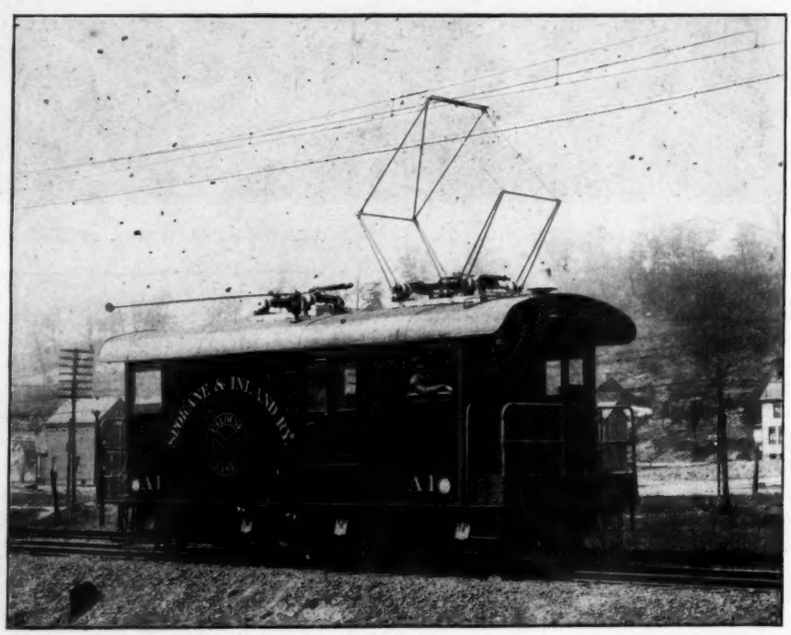


FIG. 3—ELECTRIC LOCOMOTIVE FOR SPOKANE AND INLAND EMPIRE RAILROAD.

$50,000. It is understood the plant will be rebuilt.

Articles of incorporation have been filed by the Acme Machine Co., which will equip a plant for the manufacture of machinery and machine parts. The capital stock is $5,000, with I. Dreifus, J. J. Schultz and E. E. Kirkpatrick as directors.

Mechanical devices for consuming unburned gases in furnaces are to be manufactured and sold by the U. S. Return Hot Blast Co., which has been organized in this city with $10,000 capital stock. Those interested in the company are: Charles J. Shoemaker, William G. Munson and Gladys I. Munson.

The Light Car Inspection Co., Hagerstown, Ind., has ordered plans and will build a large addition to its plant. Recently the company began the manufacture of gasoline engines and this branch of the business is to be extended.

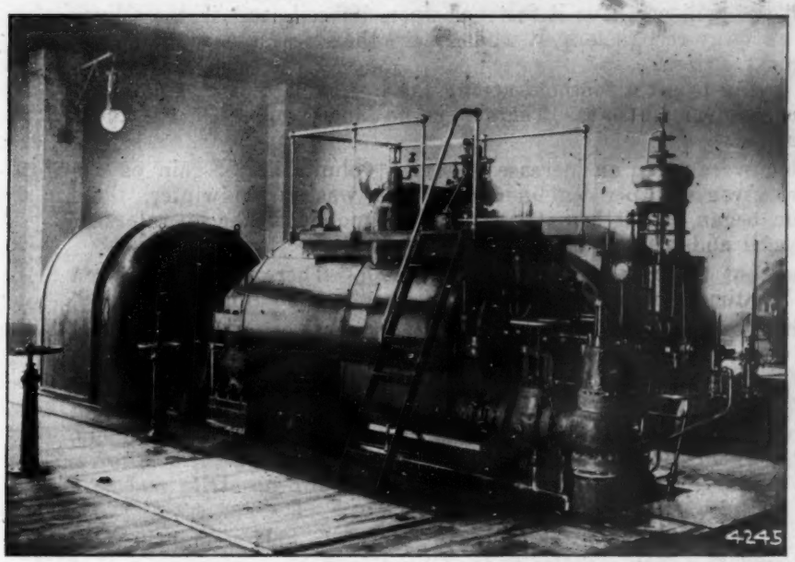


FIG. 4—WESTINGHOUSE-PARSONS STEAM TURBINE AND GENERATOR.

WILL TEST SIGNALS.

The Interstate Commerce Commission has appointed a board of experts to supervise and conduct experimental tests of block signal systems and other safety devices as provided for by the joint resolution of congress. The members of this board are: Prof. Mortimer E. Cooley, chairman; Capt. Azel Ames Jr., Frank G. Ewald and B. B. Adams. In the appointment of this board of experts the commission has had the cooperation of the American Railway Association, and a committee from that body has tendered the commission the use of railway tracks and other facilities for conducting the tests.

OPEN-HEARTH FURNACES

Are Approaching Completion at Plant of Colorado Fuel & Iron Co.

(Special Correspondence.)

Pueblo, Colo., July 26.—During the past few months the Bessemer steel department at the Minnequa plant has been running at its full capacity to get out rush orders and has been turning out from 1,400 to 1,500 tons of finished material every 24 hours. When the new open-hearth furnaces are placed in operation and are running smoothly, it is believed that their output will equal that of the Bessemer department. Rumors have been circulated that the starting of the new furnaces will result in a reduction of force in the Bessemer steel department, but the company officials deny this, saying that the force will be increased by the addition of a sufficient number of men to keep all departments working full time. During the past few weeks, many employes have left the plant to secure employment elsewhere, but new arrivals are coming in constantly. Recently a large delegation of emigrants, mostly Greeks, arrived in the city and proceeded immediately to Bessemer to join colonies of that nationality. They probably will be started to work at the plant within a short time. With the addition of the open-hearth furnaces now nearing completion, the output of the steel works will be increased to such an extent that it will be possible to get out considerable of the rush work now on hand. According to a conservative estimate, it will be nearly a year before the plant catches up with the orders already placed.

The converter department, which has been out of commission for over a week, is in running order again and since improvements have been made in other departments, everything is now in good working order. From this time on, the plant will be able to turn out the finished product in good shape and with an increased capacity which does not in any way lower the grade of the material. The rail mill, which has been getting out a rush order of 90-pound rails, is now at work on the 85-pound sections and these will be turned out rapidly.

Surveying for the building of a new camp by the Colorado Fuel & Iron Co., one mile and a half from Segundo and a short distance from Trinidad, has been completed and the building of the camp started. A new coal mine is to be opened at that place and the vein of sufficient thickness to make it the richest and most productive in that entire section. At present, deeds for the land are being fixed up and the erection of the company's houses is to start shortly. The new camp is not situated on the line of the Colorado and Wyoming railway, as most of the company's mine holdings are, but a branch line will be run directly to the mine.

Within the next month or six weeks, several new furnaces will be ready for operation in the open-hearth department. An eastern firm which takes contracts thoughout the entire country, has had a large force of men at work for the past year on the improvements and additions to the plant, and the work which includes many new appliances, and the erection of large furnaces, will, when completed, cost millions of dollars. The improvements now nearing completion were made necessary by the big orders for steel and finished material of all kinds coming in so rapidly that something had to be done to increase the output in order to meet the demand. When the new furnaces are in full operation, it will mean that several hundred more men will be added to the force of 5,000 workmen now employed.

A new ore receiving port will be opened to lake trade within a very short time at Indiana Harbor, Ind. It is planned to have 200,000 tons of ore dumped on the docks before the close of navigation.

REPRINTED FROM THE DULUTH SUNDAY NEWS TRIBUNE, JULY 21, 1907

NO ROOM IN MINNESOTA FOR THE WESTERN FEDERATION OF MINERS

MINNESOTA has no room for the Western Federation of Miners.

This is not Colorado and the history of Colorado through the introduction of Western Federation methods must not be repeated here.

Minnesota has a great many labor unions. They are welcome. They are composed of intelligent, loyal citizens. But the Western Federation of Miners is not a labor union; it is an organization for revolution; it is utterly lawless in its methods, it is anarchistic in its principles and marches under the red flag.

Minnesota does not want it and will not have it fastened upon its soil, and if the Oliver Iron Mining company should in any way recognize it, it would merit the severest censure and unstinted condemnation of every good citizen.

For three years it has been trying to get a foothold among the iron miners of this state. It has had little success. There was no demand for it. There were no labor troubles in the mines requiring organization for settlement.

A year ago all classes of labor were given an increase of wages voluntarily. Again on the first of January, 1907, they were given a 10 per cent increase. This was in midwinter, three months before the mining season began, but it has always been the policy of the operators of the mines to take care of their men and to have them share in their prosperity.

There are no company stores, but the men get their pay in cash. There are no children employed; every man can make full time if he wants to work, and they are comfortably housed.

More than this, the finest school buildings and the best schools, the most completely equipped educationally to be found in the state, are provided for their children, and 90 per cent of the expense of this and of all the splendid municipal and social organization on the ranges is paid without questioning by the mine owners.

There is no other mining section in the world where conditions are better for the miners, and they were contented until the agents of the Western Federation came among them—professional agitators, without fealty to any country, whose business it is to stir up strife and who flaunt the red flag of anarchy.

Meeting with little success among the miners, these men stirred up trouble among the dock workers of this city. They followed this with a notice to the Oliver Iron Mining company that unless an increased scale of wages was granted, the men who had affiliated with their organization in the mines would strike on July 29. This was dated on July 18. Two days later, without notice, the strike was ordered. This of itself shows the utter unreliability and lawless character of these men.

A large majority of the miners are believed to be satisfied and willing to work, but those who have joined this Western Federation, under the leadership of these inciters to crime, are now marching through the mines intimidating the other workmen, who are nearly all foreigners, ignorant of the ways of this country and of their rights.

They are threatening the destruction of property. This cannot be tolerated, and absolutely no recognition save that of the stern and swift enforcement of the law should be given these men.

They should find very suddenly that Minnesota is a law-abiding state. There should be a solidly united front of every good citizen against them and they should be made to feel the weight of public indignation and the hopelessness of any effort to fasten the blight of the Western Federation upon this fair state.

The authorities should not wait for this strike to develop actual violence. It is already threatened, and the history of the Colorado and Idaho mines would warrant immediate action. Every saloon on the ranges should be closed at once and sufficient force be provided now to insure the public peace and safety. No man who is law-abiding and intends to observe the rights of others can take the uniform of the police or the uniform of the state guard as a threat. He will rather welcome it as a protection, and those others who view either as a menace need this emphatic evidence that Minnesota regards them as undesirable citizens and will not for one minute be awed by their threats or suffer their incitement of others to crime.

But first of all, Governor Johnson should immediately order the saloons closed and liquor should be taken out as a disturbing factor, and always the most dangerous one.

OPERATIONS AT THE HARTLEY, SHENANGO AND OTHER MINES

Office of THE IRON TRADE REVIEW,
411 Providence Bldg.,
Duluth, July 26.

The Hartley mine east of Chisholm, where the Steel Corporation has been stripping since early in 1906, can be made ready for shipping ore at almost any time though this will be avoided until a late date in order to get the pit in as good shape as possible. It is likely, therefore, that no shipping will be done this season, or at least not until near the close. The ore body here is long and narrow as shown by the shape of the pit sketched in Fig. 1 and though not large as compared with some of the open pits has not been very expensive to open up because of the moderate surface depth and character of overburden.

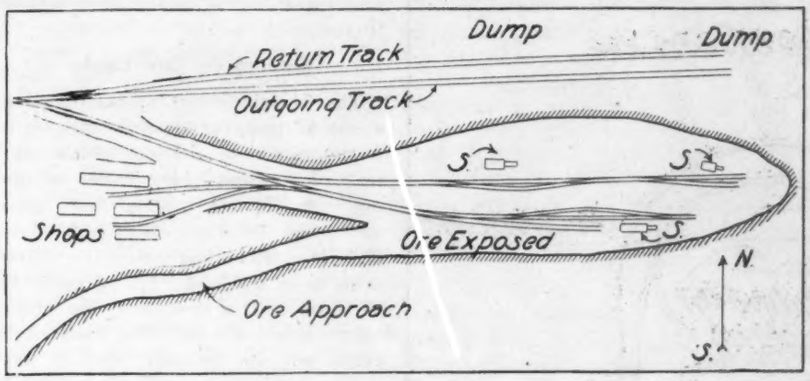


FIG 1.—HARTLEY PIT.

There are at present three shovels working in the pit with as many more in the yard, one of these having been just backed out of the pit. Seven standard equipment trains are used on the stripping and the dump has been built right alongside of the pit, so that the run out is comparatively short and the length of the pit permits of fairly good grades with no curves. The ore approach has been cut ready for laying the tracks and the haul out will be easy.

The equipment at the Hartley was practically all new with the beginning of operations. New machine and blacksmith shops, power house and office were erected, so that the facilities for maintenance and repair are somewhat above the average. This also provides for the Myers mine close by and the St. Clair which has been idle during the past two seasons.

The Shenango Stripping.

The new pit at the Shenango mine, where about 3,000,000 yards of heavy overburden are to be removed and where a great deal of difficulty is being encountered because of muskeg, is beginning to assume shape. Fig. 2 shows how the work is being begun. Two shovels are now in the cut. Up to this time, most of the surface has been dumped in a very small and inconvenient place at the west end of the cut, awaiting the opening of a tunnel under the Great Northern tracks, now completed, which gives access to a much better dumping area to the south.

Shipments are being made from the stockpiles at both shafts, but the major portion still remains to be moved.

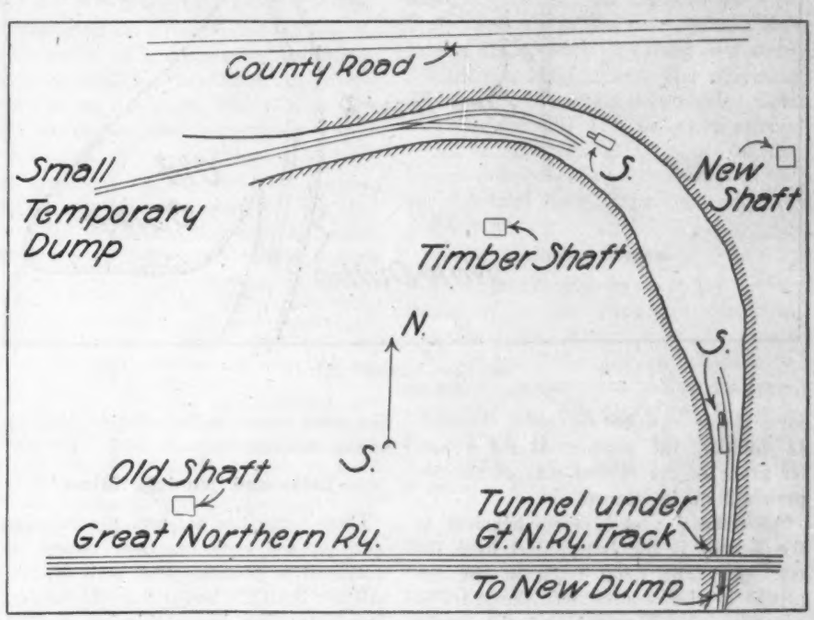


FIG 2.--SHENANGO MINE.

The Kinney Mine.

This property of the Republic Iron & Steel Co. is another example of changing mining methods, the mine now being in the process of transition from a milling pit to a steam shovel proposition. Here, however, the change does not represent the tendency toward steam shovel mining so much as it indicates the manner in which the property should have been first opened up before those now engineering the mine were in charge. The surface is not more than the average in depth and of a character that permitted the stripping of 64,000 yards in one month last year with one shovel, so that inasmuch as a great deal of surface had to be removed any way for the mills, and there is ample room for the dump, stripping appears the much more reasonable.

The sketch in Fig. 3 shows something of the layout of the present pit and the direction in which it will be opened, probably during the coming fall and winter. During the past winter and spring, the surface was removed on the south, east and north sides. On the south end of the pit, the one shovel with which the stripping is being done is cleaning up, working only on day shift. On the east side, the surafce has been removed far enough over to let in the approach tracks clear of the shovel working on that side of the ore body and on the north side room was opened sufficient to get a shovel in north of the mills where the ore runs a better grade and where one shovel is now working on night shift. This stripping work has therefore practically opened the southeast end of the ore body.

Owing to the occurrence of ore of lower grade than the larger portion of the ore body runs, here and there in the confined area of the milling pit there has always been an intermittent difficulty in

meeting the mine guarantee when such lower grade ore was encountered though a certain degree of mixing was accomplished in the mills. Even now the pit as a steam shovel proposition is not large enough to avoid altogether this difficulty. With the enlarging of the pit and by filling up the mills with the lower grade ore and then taking a steam shovel cut right through, it is believed a uniform grade can be regularly obtained. In addition, the prospect is for a better grade of ore in that part of the deposit still to be opened.

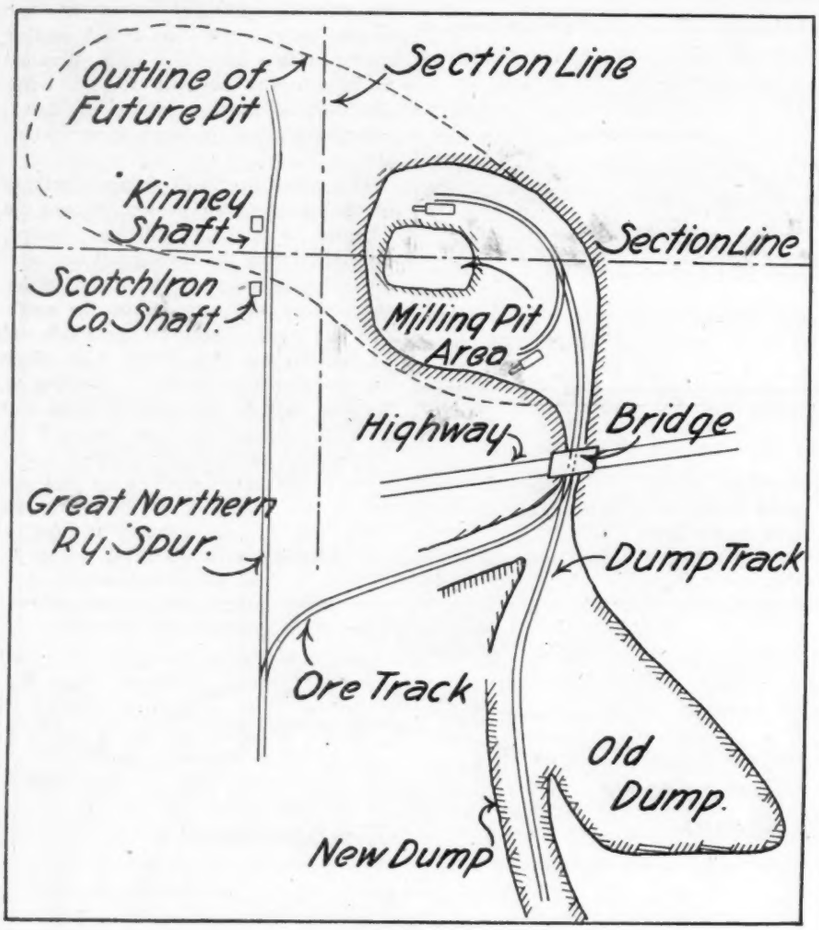


FIG. 3S—KINNEY MINE.

An unusual part of the equipment at the Kinney is the heavy steel used for trackage. The main track in the approach is of 85-pound steel, the spurs in the mine are 80-pound and the tracks on the dump 60-pound. This weight is plainly in evidence in the condition of the tracks which are in splendid shape and as a result of the experiment the operators are satisfied as to its ultimate economy. Heavy "dinkey" locomotives weighing 55 tons are also used and one of the steam shovels is a Bucyrus "Panama" Model 90 with a 5-yard bucket and it has to its credit some very good stripping records.

The dump is not far from the pit, is long and high. With but one shovel stripping, a long narrow dump shown in the sketch could be built to advantage. It is just wide enough to hold the track and instead of widening out and throwing the track it has been built up and will continue to be as long as the grade will permit. The grade is now about 2½ per cent. The sides are so steep that the dirt runs very freely and the dump is seldom blocked up.

Yates and Jennings Mines.

These properties are now a continuous open pit and each has one shovel at work. It is probable that both deposits will last but little longer than this season. The Yates first began shipping in 1904, and was operated as an underground mine for two years, getting out a little more than 100,000 tons in the two years. In 1906 it was stripped and 265,000 tons were mined, though it was a mean job because of the timbers and drifts of the underground workings. The Jennings was opened last year in the approach of the Yates, but was never considered a large ore body. Now there does not seem to be a great deal more ore in sight though an unusual amount of stripping was done for the ore apparently available. Any way the man with the maps, cost sheet and sales contracts in front of him knows.

Considerable exploration is in progress in this section of the range and over toward Mt. Iron. The property owned by Helmer and Jennings just east of the Kinney has several drills on it and it will be mined by the owners. The stripping contract it is under stood will be let out.

Options on Ore Lands.

The Scotch Iron Co., mentioned in a recent issue as owning the southwest quarter of the northwest quarter of section 14, 58-19, adjoining the Kinney mine, has given an option on the property to John Helmer, who has already moved drills in on the land. The option is for 60 days, and, if exercised, the subsequent lease will be on a basis of 50 cents per ton royalty with a payment of $3,600 for the shaft already down to a depth of 85 feet. The company's estimate of the ore body with one drill hole in it is 60,000 tons. It is one corner of the Kinney deposit and is non-Bessemer.

The Northern Mining Co. of Virginia has been incorporated with a capital of $36,000 by Nels Anderson, S. W. Gilpin, C. R. Lenont, H. J. Nathanson and P. R. Vail, all of Virginia. The company will handle the property in section 24, 58-20 where ore was recently shown up.

The Margaret Mining Co. has been organized by Geo. H. Crosby as a holding company for his interest in the property southwest of Hibbing which Coates and Miller now have under lease.

RECORD COKE PRODUCTION.

The estimated coke production for the 26 weeks ending June 29 was 10,741,282 short tons. Of this amount the Connellsville region produced 7,424,963 short tons, and the Lower Connellsville region produced 3,316,319 short tons. The first quarter of the year there were produced in the Connellsville region 3,704,894 short tons, and in the second quarter there were produced 3,720,069, which illustrates very thoroughly the even rate of production that is being maintained in the coke regions. The Lower Connellsville region produced in the first quarter of the year 1,617,119 short tons, and in the second quarter 1,699,200 short tons of coke. It required 378,987 cars to carry this to market.—*Connellsville Courier.*

EQUIPMENT ORDERS

Will be Placed by Southern and Hocking Valley Lines—Railroad Notes.

It is officially announced that the Southern Railway Co. will at once purchase fifty new locomotives, seventy-five passenger coaches, four dining cars, six combination passenger and baggage cars, and two hundred cabooses. The general purpose in view in ordering this new equipment is the strengthening of the passenger and freight service of the railway. The new coaches are to be of the most approved modern type. It is the purpose of the company in ordering these coaches not only to supply immediate needs, but, in a measure, to anticipate future needs. The fifty locomotives will be of the lighter type and for service on lines not now requiring the heavy type of engine now in use on some of the main lines. The two hundred new caboose cars are necessary to supply a need which has grown out of the rapid increase in freight-train service—the cabooses now in service not being sufficient in number to properly equip freight trains.

Will Order Locomotives.

Announcement was made at the office of the general superintendent of the Panhandle at Columbus, O., that the Pennsylvania railroad would soon place an order for $1,000,000 worth of locomotives for service on the Pennsylvania lines west of Pittsburg. The new engines will all be additions to the company's equipment and are to be delivered in 1908. The order will include 45 freight locomotives of the H-6-B type and five passenger engines. They are to be divided equally between the northwest and southwest systems.

Arrangements have been made by the Central New England Railway Co. to replace by temporary buildings the shops at Hartford, Conn., which were recently destroyed by fire. Work on the temporary plant was begun last week. The question of building permanent shops has not been decided.

Railroad Notes.

Bids are being received by the New York Central for the construction of an extensive erecting shop at West Albany, N. Y. The building will be of brick and steel 125 x 430 feet, and its equipment will include a 40-ton traveling crane for handling boilers and smaller cranes. Later a locomotive repair shop will be erected.

The new $1,500,000 locomotive and blacksmith shop of the New York, New Haven & Hartford railroad at Readville Station, Mass., has been placed in operation. The new shop building is 150 x 900 feet of steel and brick construction, and its equipment is thoroughly up to date, including cranes of 60 tons capacity. The shop adjoins the car works of the company at Readville. George Donahue, formerly of the Erie railroad, is in entire charge of both the new plant and the car shops, while E. H. Styles is the residing engineer.

Plans for a large locomotive and car plant to be built at Springfield, Mo., for the St. Louis & San Francisco Railway Co., are being completed by the Arnold Co., architect and engineer, Chicago. The plant will consist of several large one-story and other buildings with concrete foundations, superstructures of brick and steel, gravel roofs, electric lights, and the latest equipment and appliances. About 3,000 tons of steel will be required.

The Central of Georgia railway has awarded the contract to the Westinghouse Electric & Mfg. Co., Pittsburg, for the electrical equipment, consisting of steam turbines, generators, rotary converters, transformers, switchboard and motors, to be installed in the new railroad shops which the company will erect at Macon, Ga.

MEXICAN LOCOMOTIVE PLANT.

Reporting on a concession for the establishment of a locomotive and motor plant granted by the Mexican government to an American, Vice Consul General Albert de Baer says that the concessionaire, or the company which may be organized by him for that purpose, agrees to establish a plant for the construction of railway locomotives, steam, electric or oil-combustion railway motors.

It is specified that the sum of 200,000 pesos ($99,600 United States currency) shall be invested in this enterprise. Construction of the plant shall be commenced within two months after the approval of the plans and projects submitted to the Mexican government and shall be completed within four years thereafter. Said plans must be presented to the government within eighteen months of the date of the promulgation of the contract (May 18, 1907).

In the event of the government desiring to purchase any of the products of the plant the concessionaire is required to supply them at 10 per cent less than the general wholesale price.

The concessionaire shall at all times maintain a representative at the City of Mexico, who shall be fully empowered to transact all necessary business with the government. The machinery, construction, material, etc., required for the establishment of this industry shall be exempt from the payment of customs duties. The importation of the apparatus and material necessary for the electric lighting installation and fire extinguishing apparatus at the different plants shall be entitled to free entry.

INDUSTRIAL PEACE

Reigns in the Anthracite Region—Labor News.

The Board of Conciliation, created by the Strike Commission of 1902 to settle disputes between the anthracite coal miners and operators, has at last a clean docket. Not a single case is today pending. This marks a condition of industrial peace brought about by means which are probably unique in this country. It must be assumed that, if the miners have no complaints to make, they are satisfied with the way they are being treated.

During the four years of the commission's existence 159 differences between the coal operators and their employes have been settled. The board itself—composed of three representatives of the operators and three of the miners—has disposed of 132 of the cases, and an even division of the board has made it necessary to refer only 27 cases to an umpire. Of these appeals, he sustained the complainant in only 6 cases.

Will Not Sign Scale.

Birmingham, Ala., July 25.—G. B. Crowe, who is at the head of two or three mining companies with mines in the lower part of Jefferson and in Tuskaloosa counties, has declined to sign the wage scale of the union miners and asserts his intention of getting in a number of non-union miners and operating his mines. The Pratt Consolidated Coal Co. does not deal with the union miners at all in Alabama. This is one of the largest independent coal companies in the state and its daily output will soon be 20,000 tons.

Labor Notes.

The openers employed at the Greer tin plant of the American Sheet & Tin Plate Co., New Castle, Pa., have gone on a strike for an advance in wages of 6 per cent. The management declares the plant will continue to operate regardless of strike and that the advance sought will not be granted.

Labor organizations of Philadelphia are complaining of excessive bail in the case of a union striker at the Scott works of the Railway Steel Spring Co. He has accumulated a total bail of $3,200 by reason of four different arrests since the beginning of the strike.

J. S. Mundy, Newark, N. J., manufacturer of hoisting engines, is making excellent progress in installing the open shop principle in his works. These were struck several weeks ago, about 120 machinists going out at the time, several of them later returning.

SLIGHT INCREASE

In Canadian Pig Iron Production Over Last Half of Last Year.

The American Iron and Steel Association has received direct from the manufacturers complete statistics of the production of pig iron in Canada in the first six months of 1907.

Total Production.—The total production of all kinds of pig iron in the Dominion in the first half of 1907 amounted to 270,100 gross tons, as compared with 259,947 tons in the last half of 1906 and 282,010 tons in the first half. This is an increase of 10,153 tons over the last half of 1906 but a decrease of 11,910 tons as compared with the first half. The following table gives the half-yearly production, in gross tons, since 1904, as ascertained by the association:

Periods.	1904.	1905.	1906.	1907.
First half	120,643	210,206	282,010	270,100
Second half ..	150,299	257,797	259,947	.....
Total.....	270,942	468,003	541,957	.....

Classified Production.—The production of Bessemer pig iron in the first half of 1907 amounted to 73,023 tons, against 86,558 tons in the last half of 1906 and 79,051 tons in the first half of that year. This is a decrease of 13,535 tons as compared with the last half and of 6,028 tons as compared with the first half of 1906.

The production of basic pig iron in the first half of 1907 amounted to 161,403 tons, against 110,930 tons in the last half of 1906 and 135,298 tons in the first half. This is an increase of 5,473 tons over the last half of 1906, and of 26,105 tons over the first half.

The production of malleable Bessemer, foundry, forge, and other miscellaneous grades of pig iron in the first half of 1907 amounted to 35,674 tons, against 62,459 tons in the last half of 1906 and 67,661 tons in the first half.

Production by Fuels.—The production of bituminous pig iron in the first half of 1907 amounted to 265,253 tons, against 254,547 tons in the last half of 1906 and 271,169 tons in the first half. The charcoal pig iron made in the first half of 1907 amounted to 4,847 tons, as compared with 5,360 tons in the last half of 1906 and 10,661 tons in the first half. In the first half of 1907 no pig iron was made in the Dominion with electricity, but in the last half of 1906 forty tons were so made and in the first half of that year 180 tons were produced.

Furnaces in Blast.—On June 30, 1907, Canada had 14 completed blast furnaces, of which 10 were in blast and 4 were idle. Of this total 12 were equipped to use coke and 2 to use charcoal. In addition 1 coke furnace was being built on June 30, and 1 charcoal furnace was being rebuilt. Three coke furnaces were also partly erected on the same date, work on which had been suspended for some time.

During the first half of 1907 the total number of furnaces in Canada actually in blast for the whole or a part of the period was 12, of which 10 used coke and 2 used charcoal. The number that were idle during the whole period was 2 coke furnaces, one blowing in for the first time in July. The rebuilding charcoal furnace is not considered in this statement.

NEW BLAST FURNACES.

The American Iron and Steel Association announces that during the first six months of 1907 the number of furnaces actually in blast during a part or the whole of the period was 382, as compared with 374 during the last half of 1906 and 361 during the first half of that year.

Building Furnaces.—On June 30, 1907, there were 29 furnaces in course of construction, all of which will use coke for fuel, as follows: New York, 1; Pennsylvania, 10; Alabama, 1; Ohio, 9; Indiana, 5; Illinois, 2, and Wisconsin, 1. In addition 3 furnaces were being rebuilt on June 30, of which 1 coke furnace was in Virginia, 1 coke furnace was in Alabama, and 1 charcoal furnace was in Michigan. One abandoned charcoal furnace in Tennessee may also be revived in 1907.

Projected Furnaces.—On June 30, 1907, there were 13 projected furnaces, all of which if built will use coke for fuel, as follows: New York, 1; Pennsylvania, 4; Ohio, 2; Indiana, 5; and Michigan, 1. The construction of some of these furnaces is to be commenced at once; work on others may not soon be undertaken.

Iron Ore In River.—A strike of iron ore was recently made at Baltimore by a dredging company engaged in dredging the Fort McHenry channel. The ore was found to be in solid rock form and upon further investigation it was ascertained that it extended for a considerable distance down the river. It has been known for some time that the river at the point where the dredging company was at work, was underlaid with iron ore strata, and years ago the deposits were dredged and utilized by the Reese Iron Works at Lazaretto Point. The firm exhausted the surface layer, but did not find it profitable to continue its operations at lower levels.

F. M. Eaton, resident partner in Cincinnati of Hickman, Williams & Co., has returned from a trip abroad.

EXHIBITS FREE,

But Advertising Matter Must Pay Tariff.—The A. F. A. at Toronto.

The entertainment of the members of the American Foundrymen's Association, providing the convention is held in Toronto, Canada, in 1908, will be in charge of the Foundrymen's section of the Toronto Employers' Association. As the place of holding this meeting, has, however, not yet been definitely decided upon, nothing has yet been done by this body in the way of preparation. The selection of the next meeting place is in the hands of the executive committee of the American Foundrymen's Association and it is probable that Toronto will be definitely decided upon at an early date.

No difficulty will be experienced by the exhibitors in the shipment of goods into Canada or their return, as the Canadian National Exhibition, Toronto, has made arrangements with the Canadian customs department for the admission of exhibits from the United States free of duty, provided they are returned through the port of entry. When shipping, exhibitors are required to obtain an export certificate. There is a customs office in the exhibition grounds where arrangements can be made for delivery. Duty is, however, charged on all advertising matter taken into Canada in connection with exhibits.

SUBSIDIARY IS FORMED.

At a general meeting of the shareholders of the Monterey Iron & Steel Co., Monterey, Mex., an amended proposition for the organization of a subsidiary company to take over the concern's extensive coal properties was submitted by the council of administration and unanimously adopted. The proposition provides for the organization of a company to be called the Compania Carbonifera del Norte, which will have a capital stock of $11,000,000 Mexican currency and $5,500,000 gold. The properties, which the new corporation will take over, are extensive coal lands in El Alamo and Encinas districts, all of the stock of the Compania Carbonifera de Monterey, the coal properties in San Enrique La Merced and Columbia districts and other holdings. In the capital of $11,000,000 the Monterey Iron & Steel Co. will represent 73.31 per cent, or $8,064,000; the Carbonifera de Monterey, 17.60 per cent, or $1,936,000; the organizing syndicate, 9.09 per cent, or approximately $1,000,000.

MANY CARS NEEDED

To Transport Structural Steel to 'Frisco.—The Visit of the Battleships.

(Special Correspondence.)

San Francisco, July 19.—The first shipment of structural steel for the new $7,000,000 Palace Hotel of San Francisco has left the steel works in Pennsylvania and is now on the way to the Golden Gate. It will require 400 cars to carry the structural steel from the mills to San Francisco for that one building. Steel predominates largely in the material used in reconstructing the burned district; in fact, nearly every large building is of steel frame. San Francisco has no rolling mill, and most of the structural steel and iron must come here from the east. The Palace Hotel alone has placed a contract calling for 12,000 tons of structural steel with one eastern firm. Judging from the large number of steel frames rising heavenward in every direction and nearly all that material to come from the east, it is predicted that it will tax the transportation facilities of all roads leading westward and, even then, railroad men say that it will be impossible to meet the demand for cars. San Francisco will be an iron or rather a steel town, instead of the wooden town it was known to be before the fire. While some of the building trades have an ample supply of mechanics, structural iron workers are still greatly in demand. On some of the important buildings, work is pushed ahead day and night, Sundays and holidays.

The Mare Island navy yard has increased its mechanical force recently, and is pushing work with all possible speed. The great dry dock will be pushed to completion so as to have additional facilities to dock vessels when the eighteen battleships reach here and need overhauling. The government has only one dry dock, Bremerton, Washington, large enough and accessible to large ships. The government dry dock at Mare Island is large, but a battleship is likely to become stuck in the shallow water of the bar before reaching the dock.

The coming of the battleships spells a great amount of work for thousands of iron workers, skilled and unskilled, who are not here but are expected to come to San Francisco in time to share in the harvest which mechanics in the iron trades expect to reap.

A dispatch from Washington today conveys the information that the secretary of the navy has ordered the final acceptance of the protected cruiser Milwaukee, built by the Union Iron Works.

Reports have just been received here from Eureka, Humboldt, of the discovery in that county, (the exact location the discoverers refuse to divulge,) of a large deposit of magnetic iron ore. The owners of the claims are in correspondence with eastern manufacturers looking to the development of that deposit.

THE MINING ENGINEERS AT TORONTO.

(Special Correspondence.)

Toronto, Canada, July 26.—The summer meeting of the American Institute of Mining Engineers was held at the King Edward Hotel, Toronto, on the 23d and 24th inst. and was attended by about 200 members and their friends, including a number of ladies. The chair was occupied by President John Hays Hammond.

At the first sitting a suggestive paper was presented by Dr. James Douglas, of New York, entitled "Some Reflections on Secrecy in the Arts," in which he put forward a strong plea for liberty on the part of technical workers to communicate to each other their experiences and seek each other's aid in the solution of problems beyond their individual capacity. Many large manufacturing and mining concerns imposed no restrictions in this respect, but others did. Every such limitation meant the concealment of some fact or principle, which prevented its full development by helpful suggestions from others. Technical science could only progress by the co-operation of many workers and the free exchange of ideas. As an instance of the evils of undue secrecy he adduced the decline of the copper smelting industry of England and advocated the opening of industrial works to all respectable technical workers, with as few restrictions as possible.

The attention of the Institute was called to a peculiar and apparently inexplicable case of metal corrosion, occurring at the plant of the Copper Queen Consolidated Mining Co. at Douglas, Arizona. G. B. Lee, superintendent of the works, wrote to Dr. James Douglas, stating that the inner sheet of the water jackets of the furnaces in use for only five months had become badly pitted by corrosion, while the outer sheets were not attacked. In other cases jackets with inner plates ½-inch and other plates ⅜-inch thick had had the inner plates reduced in ten or twelve months to from 1-16 to ⅛-inch, while the reduction in the outer plates did not amount to 1-16 of an inch and the ⅜-inch stiffeners between showed little corrosion. Rotary pumps circulating water for condensers were badly pitted at certain points being eaten away ¼-inch for a space of one or two inches, while the space immediately adjoining was not attacked. No action at all was detected in the boilers, the condition of which, after being used for two and one-half years, was found by inspection to be excellent. Repeated analyses of the water used, brought from wells 500 feet deep, detected nothing that would explain the corrosion, the singular feature of which was that only certain parts of the metal were affected. The company was having water jackets made of charcoal iron in the hope that it would not be affected so readily as the steel plates. Samples of the corroded metal were submitted in the hope that some of the members could throw light on the problem.

In presenting his paper on "The Electric-Air Drill," William L. Saunders, of New York, gave a brief account of the experiments made by Edison, Prof. Elihu Thompson and others to perfect a system by which electricity would be made available for rock-drilling purposes. The problem had engaged the attention of mining engineers for 20 years, and at least $800,000 had been spent, before a solution was arrived at by the adoption of the principle of air pulsation. The electric-air drill he claimed to be the only one by which electricity could be made commercially applicable to the drilling of rock. The Ingersoll-Rand Co. had installed over 100 electric-air drill plants in mines. The pulsation of air by electricity could be applied to other machines, and was in use for the cutting of grooves in marble in the marble quarries of Vermont, where it had supplanted compressed air. In the course of the discussion following the reading of the paper, Mr. Saunders explained that the special advantage of the electric-air drill lay in its dealing a peculiar blow combining a push and a pull, the compressed air acting like a spring in forcing the drill back. This elasticity in its action rendered its extraction easy when caught in a hole. Although its cost was about 20 per cent higher than an air drill equipment it was more economical in working, owing to the saving in fuel which amounted to about 50 per cent.

A number of the members of the Institute left on the evening of the 24th on an excursion to Cobalt and other mining districts of Northern Ontario arranged by the Ontario government. Among other localities visited will be the Moose Mountain iron mine, north of Sudbury.

The Royal Typewriter Co. has drawn plans for a new plant to be erected in Hartford, Conn. There will be a main building four stories, 51 x 308 feet. Another four-story building will be 50 x 145 feet.

AMONG NEW ENGLAND INDUSTRIES.

(Special Correspondence.)

Worcester, Mass., July 22.—Edward J. Humphreys, for many years owner of the Millbury Machine Co., Millbury, Mass., has sold his interest to Warren B. Harris. Poor health is the cause of Mr. Humphrey's retirement.

F. & T. Fairbanks & Co., St. Johnsbury, Vt., scale makers, have decided to establish a plant at Sherbrooke, Canada. The company's Canadian business has been growing steadily. The Sherbrooke plant will be fully equipped with all the necessary machinery for the manufacture of scales, brass valves, power hammers and saw tables, all of which are now made at their St. Johnsbury plant.

Representatives of the Trenton Wire Co. of New Jersey are inspecting the plant of the National Wire Co., Fair Haven, Conn., with a view to purchasing. The National Wire Co. is undergoing a receivership.

The south end of the shop of Hamblin & Russell Mfg. Co., Worcester, fell to the ground July 13 while repairs and additions were under construction. The company makes wire goods.

The business and machinery of the Eastern Wire & Cable Co., Roxbury, Mass., have been purchased by the Electric Cable Co., of Bridgeport, Conn., and the equipment will be transferred to Bridgeport at once. The main plant of the Electric Cable Co. is now being enlarged.

The Waterbury Cartridge Co., recently organized, will erect a two-story brick factory 118 x 190 feet.

The Rutherford Wheel Co., incorporated under Maine laws, is starting a plant in Stamford, Conn. The concern has leased the plant formerly occupied by the International Oil Engine Co. It has ordered about $100,000 worth of special machinery and expects to begin work in the fall with about 100 employes.

A large amount of condemned stores and old machinery was sold by auction at the Charlestown navy yard July 22, including 11,000 pounds zinc dross, 458,000 pounds of boiler shells and one hundred tons of scrap steel. The sale was one of the largest, in point of bulk, ever held at the yard.

The Hall Railroad Signal Co., Meriden, Conn., and the Birmingham Brass Co., of Huntington, Conn., have filed preliminary articles of dissolution. The business and plant of the Birmingham company has been taken over by the American Brass Co.

Certificates of incorporation have been filed by the Dean Steel Die Co., New Britain, Conn., and the Connecticut Gage Co., Norwich, Ct. The Dean company has capitalization of $50,000 and will make all kinds of dies. The gage people will make speed indicators and registering machines.

CINCINNATI METAL TRADES ASSOCIATION OUTING.

The Cincinnati Metal Trades Association will give its second annual outing at Chester Park, a pleasure resort in that city, on Aug. 3. This feature was such a success last year that it was decided to repeat it this year. All employes in the shops of members of the association and their families are to be entertained at the park and all amusement devices will be free. Tickets are in the hands of the time keepers of the shops for distribution. Invitations have been sent to the officers of other Metal Trades Associations and to the administrative council of the National Association and some acceptances have been received.

In the evening the regular quarterly dinner of the Cincinnati branch of the N. M. T. A. will be held at the club house of the park.

The committee in charge of the outing consists of B. B. Quillen, of the Cincinnati Planer Co., Phil. Geier, of the Cincinnati Milling Machine Co., P. G. March, of the Cincinnati Shaper Co., E. Von Wyck, of the Von Wyck Machine Tool Co., and S. S. Schauer, of the Cincinnati Machine Tool Co.

Recent dividend declarations include the following: Cambria Steel Co., regular semi-annual dividend of 1½ per cent, payable Aug. 15; United States Cast Iron Pipe & Foundry Co., regular quarterly dividends of 1 per cent on the common stock, and 1¾ per cent on the preferred stock, payable Sept. 2; J. G. Brill Co., regular quarterly dividend of 1¾ per cent on the preferred stock, payable Aug. 1, and 1 per cent on the common stock, payable Sept. 2; Hamilton Machine Tool Co., regular quarterly dividend of 1½ per cent on its preferred stock, payable Aug. 1; Pullman Co., regular quarterly dividend of 2 per cent, payable Aug. 15.

Furnaces Blown In.—The blast furnaces of the Atikokan Iron Co., Port Arthur, Ont., were blown in July 17. The construction of the furnaces has involved a capital expenditure of $1,300,000. To maintain a sufficient ore supply about 100 men are employed at the mine. The bulk of the pig iron output is already contracted for by the Canadian Foundry Co.

REVISED NATIONAL IRON AND STEEL, COAL AND COKE BLUE BOOK ISSUED.

The third edition of the National Iron and Steel, Coal and Coke Blue Book has just been issued by R. L. Polk & Co., publishers, 307 Market street, Pittsburg. The work presents a number of improvements over the previous volumes which contribute to aid the reader in employing the book for reference purposes. The cross reference feature, wherein is given the name of the company as formerly known and showing the present title of the firm or corporation having secured the control of the same, has been continued and elaborated. In that portion of the book devoted to iron and steel manufacture the names of the officers and directors appear in alphabetical order with the name of the firms, or companies, with which the various individuals are associated, and there is also a grouping of the companies arranged according to the character of their plants. The various works are classed by states and arranged alphabetically by towns. The index of the products of iron and steel manufactures is also arranged in alphabetical order. Many of the headings or titles of material are subdivided, showing specifically what each company, or firm, produces. Numerals following the heading correspond to other numerals opposite the names of the companies producing the articles named. An alphabetical list of iron and steel manufacturers of the United States, Canada and Mexico, with a full description of the plant, or plants operated, showing the equipment, tonnage, capacity, shipping facilities, etc., is also given. In the pages devoted to the coal and coke companies or individuals the grouping is in alphabetical order by anthracite and bituminous divisions, irrespective of location and tabulated by states and counties, the latter list showing the location of mines or works with the tonnage or output. The book will be furnished by THE IRON TRADE REVIEW at the regular price of $10 each.

The Western Foundry Supply Co., East St. Louis, Ill., has opened an office in New York City at 99 John street. The company recently completed its new plant at East St. Louis, and is building a new mill in New Jersey. The combined output of these two plants in the products manufactured by the company, including ferro-silicon, ferro-manganese, ferro-chrome and other refractory materials is considerably greater than its former capacity, and will enable it to make prompt shipment on orders from any section of the country.

Steel Stocks Affected by Ore Strike

Although there was a slight improvement in the volume of transactions as well as in speculative interest and sentiment, the stock market in the week under review has responded irregularly to the influences brought to bear upon it and prices have shown both gains and declines. The effect of the strike of ore handlers and miners in the Mesabi ranges was early shown in the movement of United States Steel securities. Weakness in these stocks developed, but toward the close of the week, when the situation was somewhat clarified as to the policy of the corporation, a quick recovery ensued, and at the week's end, net gains were shown in these securities, respectively, ⅞ point in the common, ¼ point in the preferred and 1⅛ points in the bonds. United States Steel transactions of the week were 243,300 shares common and 15,300 shares preferred. Among other industrials New York Air Brake took the lead in an upward movement, gaining 7⅝ points. The sales of this stock were 15,405 shares. The period under review was featured by intense speculative interest in Southern Pacific and Union Pacific stocks, resulting from the approach of the dividend declarations, but the enthusiasm in this respect was dashed by the reported statement of the head of the Harriman system that the Southern Pacific dividend would in no event exceed the 6 per cent limit. The money market has shown an easier tone due to the usual reflow of funds into bank reserves following the half yearly disbursements. Call loans in the week averaged 3 per cent, against an equal figure last week and 2¼ per cent last year, while 60 day loans, New York, were 4¾ per cent this week, 4¾ per cent last week and 4½ per cent last year. The New York banks gained $5,866,000 in cash, according to the weekly statement, and $170,600 in the reserve surplus. This latter increase raises the amount held by the banks in excess of their legal reserve requirements to $9,258,675, against $18,892,475 on July 28, 1906. The total deposits gained $22.781,600, against which the loans were expanded $17,913,700. The New York exchange trading in the week totaled 3,078,150 shares, against 2,914,000 shares last week and 4,723,400 shares the corresponding week in 1906. Bond buying has improved to some extent as indicated by the total sales of the week, exclusive of government bonds, aggregating $5,422,000, against $4,219,000 last week and $6,565,000 the same week of last year.

Copper Stocks.

Boston.—Calumet & Arizona, closed 167, net gain in week 1; Calumet & Hecla Mining, closed 800, net loss 15; Green-Cananea, closed 15⅝, net loss ⅛; North Butte Mining, closed 82, net loss 2; Osceola Mining, closed 128.

New York.—Amalgamated copper closed 90¼, net gain 1¾.

Financial Notes.

The Westinghouse Electric & Mfg. Co. has listed with the New York exchange an additional $666,650 assenting stock, making the total amount listed $21,663,000. Authority was further given to add to the list from time to time, until Jan. 1, 1908, $433,350 in assenting stock on official notice that it had been paid for in full.

The Pittsburg Coal Co. shows by statement the gross earnings of itself and subsidiary companies for the month of June 1907, to be $550,637.39, against $541,708.74 in June, 1906. The net earnings for June, 1907, were $315,415.70, compared with $274,840.73 a year ago. For the first six months of 1907 the gross earnings were $2,525,108 and the net earnings $1,128,011.57, compared with $2,384,422.32 gross earnings and $858,336.73 net earnings the corresponding period in 1906.

The General Electric Co. announces that the entire issue of $13,000,000 5 per cent 10-year convertible bonds has been subscribed for. The first payment has already been made, and the second obligation of 50 per cent falls due Jan. 20, 1908.

Recent dividend declarations include the following: Pressed Steel Car Co., regular quarterly dividend of 1¾ per cent, payable Aug. 28; La Belle Iron Works, regular quarterly dividend of 2 per cent, payable Aug. 1.

THE LEADING INDUSTRIAL SECURITIES.

	Clos'ng Quo. July 27	Changes in Week	Date 1907 Ann. M't'g	Stock Outstanding	Dividend Basis	Dividend Last Paid	Dividend Date Last Div. Pay.
Allis-Chalmers	9¾	− ⅝	Sept. 5	19,820 000		.....	.....
Allis-Chalmers pr	27	−3		16.150 000	7 cum	.....	Feb., 1904
American Can	5¾	+ ⅛	Feb. 7	41.233.300		.....	.....
Am. Can pr	53¼	− ½		41,233,300	7 cum	5 Q.	Apr. 1907
Am. Car and Fdy	43⅞	− ⅛	June 27	30,000.000		2 Q.	Apr. 1907
Am. Car and Fdy pr	100	.....		30,000,000	7 n. c.	7 Q.	Apr. 1907
American Loc.	59¼	+ ⅛	Oct. 5	25,000 000		1¾ Q.	May, 1907
American Loc. pr	106¾	.....		24,100,000	7 cum	1¾ Q.	July 1907
American Ship	72	− ¼	Oct. 2	7,600,000	6	1 Q.	June, 1907
American Ship pr	103½	− ½		7,900,000	7 n. c.	1¾ Q.	Jan , 1907
Am. Steel Foundries	7⅛	.....	Oct. 1	15.810 000		.....	.....
Am. Stee Foundries pr	39	−1½		17.240,000	6 cum	.....	Aug., 1904
Barney & Smith	65	.....	June 4	2,0 0.000	4	1 Q.	June, 1907
Barney & Smith pr	128⅜	.....		2,500 000	8 cum	2 Q.	June. 1907
Bethlehem Steel	13	−1	April 2	14 862.000		.....	.....
Bethlehem Steel pr	40	.....		14.90-.000	7 n. c.	1¾ Q.	May, 1907
Cambria Steel	36½	− ¼	March 19	45.000.000*	6	3 Q.	Feb., 1907
Cambria Iron	46	.....		8,468.000*	4	4 S. A.	Apr., 1907
Chicago Pneumatic Tool	40	.....	Feb. 18	6,145 800	4	1 Q.	July, 1907
Colorado Fuel	33½	+1⅜	Oct. 21	30.132.000		....	Apr., 1902
Crucible Steel	8½	− ⅛	Oct. 16	24.578 400		.....	.....
Crucible Steel pr	69⅞	− ¼		24.436 500	7 cum	6	Mar., 1907
Empire Steel	8	.....	Feb. 27	2.281.400		.....	.....
Empire Steel pr	57	.....		2,500,000	6 cum	3 S. A.	July, 1906
Fay & Egan	100	.....	Feb. 19	1 00-.000	6	1¾ Q.	May, 1907
Fay & Egan pr	128⅛	.....		1,000 000	7 cum	1¾ Q.	May, 1907
General Electric	139	−1	May 14	63 643.600	8	2 Q.	July, 1907
Harbison-Walker	133½	−1	Jan. 21	18,000,000	6	.....	.....
Harbison-Walker pr	72¾	.....		9 600.000	6 cum	1½ Q.	July, 1907
International Pump	25	.....	June 4	17,702.500	2	.....	Apr., 1905
International Pump pr	72¾	.....		11,350.000	6 cum	1½ Q.	Aug., 1907
Lackawanna Steel	52	+2	March 13	34,971 400	.....	.....	.....
Lake Sup. Corp.	8	.....	Oct. 2	40,000 000	.....	.....	.....
New York Air Brake	123⅞	+7⅜	June 18	10.000 000	8	2 Q.	Apr., 1907
Niles-Bement-Pond	130	.....	Feb. 6	5,000,000	6	6 Q.	Mar., 1907
Niles-Bement-Pond pr	105	.....		2.000,000	6 cum	2 Q.	May, 1907
Otis Elevator Co	35	.....	March 18	6.350 300		3 A	Apr., 1907
Otis Elevator Co. pr	89	.....		6,308 500	6 n. c.	1½ Q.	July, 1907
Penn. Steel	60	.....	May 13	10.750 000		.....	.....
Penn. Steel pr	100	− ½		1 ,500 000	7 n. c.	3½ S. A.	May 1907
Pittsburg Coal Co	11¼	− ⅛	Feb. 11	32 000 000		.....	Nov., 1906
Pittsburg Coal pr	54	.....		32,0.0.000	7	.....	Apr. 1905
Pressed Stl. Car	35	.....	Feb. 20	12 500,000	3		Aug., 1904
Pressed Stl. Car pr	91½	+1½		12 500 000	7 n. c.	1¾ Q.	May 1907
Pullman	162¾	+ ¾	Oct. 17	100,000 000	8	2 Q.	May, 1907
Railway Stl. Spring	42½	.....	March 7	13 500.000		4 S. A.	Mar., 1907
Railway Stl. Spring pr	89	.....		13,500.000	7 cum	1¾ Q.	June, 1907
Rep. Iron & Steel	28½	+ ⅛	Oct. 9	27 191,000	.....	.....	.....
Rep. Iron & Steel pr	84	.....		20.416 100	7 cum	1¾ Q.	July, 1907
Sloss-Sheffield	57	−1	March 5	10,000,000	5	5 Q.	June, 1907
Sloss-Sheffield pr	95½	.....		6 700,000	7 n. c.	1¾ Q.	July, 1907
Tenn. Coal & Iron	143	.....	May 7	22.553 000	4	1 Q.	Aug., 1907
U. S. Pipe & Fdy	35⅞	+1¼	June 26	12 500,000	4	1 Q.	June, 1907
U. S. Pipe & Fdy. pr	81¾	−1¾		12.500 000	7 n. c.	1¾ Q.	June 1907
U. S. Steel	37⅜	+ ⅜	April 15	508,302 500	2 n. c.	½ Q.	July, 1907
U. S. Steel pr	100⅞	+ ¼		360.281.100	7 cum	1¾ Q.	June, 1907
U. S. Steel 5's	97⅛	+1⅛		463.798 000	5	5 A.	.....
Va. Iron, Coal & Coke	62	.....	Sept. 17	8,641.600		.....	.....
Westinghouse Elec	145	−1½	July 24	24 998.700*	10	10 Q.	Apr., 1907
Westinghouse Air Brake	148	+3	Oct. 1	11,000,000*		22½ Q.	Jan., 1907

Par value of shares, $100, except those starred (*), $50.

NEWS FROM MANY INDUSTRIES

New Buyers:—

The Industrial Iron Works Co., Clinton, Mo., capital $5,000, has been formed by W. F. Hall, L. H. Hall, C. O. Tobias and others.

The Model Iron & Wire Co., Milwaukee, capital $20,000, has been incorporated by Chris. J. Meyer, John M. Gilman and Charles Gersonde.

The Hanlon Nut-Lock Mfg. Co., New Liberty, Ky., has been incorporated by D. B. Hanlon, T. H. North and W. S. Ball.

The Armstrong Machine Co., Louisville, Ky., has been organized with a capitalization of $10,000 by Harry Y. Armstrong, Thomas L. Jefferson and Floyd W. Jefferson.

The Adjustable Steel Centering Co., Fond du Lac, Wis., has been formed by J. E. Hennen, J. E. Dooley and H. T. Sackett, with a capital of $18,000.

The Hines Well Drilling Machine Co., Portland, Ind., has been organized with a capitalization of $10,000 by J. S. Hines, O. S. Whiteman and I. R. Hines.

The Fulton Metal Works, Fulton, Ill., manufacturing, has been chartered with an authorized capital of $5,000 by Frank W. Dana, Louis A. Lempke and Edward H. Downs.

The Toledo Chimney Machine Co., Toledo, has been formed with a capital of $25,000 by Bernard C. Gilligan, W. D. Keenan, L. J. Ulrich, L. F. Conway and L. A. Gilligan.

The National Ore, Tailing & Machinery Co., Birmingham, Ala., has been incorporated with a capital of $5,000 by J. A. Menze, A. F. Crane, M. F. Gorman, G. W. Coen and J. Dur.

The Parlin & Orrendorff Machinery Co., Canton, Ill., has filed articles of incorporation with a capital of $100,000. The incorporators are: H. G. Orrendorff, A. J. Street and L. H. Gillet.

Articles of incorporation have been filed by the Standard Core Co., Grand Rapids, Wis., with a capital of $10,000. Those interested are: George W. Mead, Isaac P. Witter and R. L. Kraus.

Articles of incorporation have been filed by the Fuller Railway Electric Signal Co., Atlanta, Ga., with a capital of $500,000. Those interested are: W. R. Fuller, A. P. Morgan and W. P. Fain.

The Steel Cushion Tire & Mfg. Co., Camden, N. J., has been chartered to manufacture tires and cars, wagons, boats, etc., by C. W. Walk, W. M. Simmons and M. J. Dain. The company is capitalized by $125,000.

The Perritt Iron & Roofing Co., Trenton, N. J., iron, steel, coal, coke, etc., has been chartered with an authorized capital of $30,000 by Elliott E. Perritt, H. J. Nesbit and E. L. Kern, all of the above address.

The Victor Steel Lath Co., Camden, N. J., to manufacture steel lath for use in construction of fire-proof buildings, capital $100,000, has been organized by Nicholas J. Schumuncker Jr., Joseph R. Radford and Alfred R. Collins.

The Western Gravity Lock Co., St. Louis, has been organized with a capitalization of $10,000 to manufacture and deal in tools, etc., by Oscar Wiegmann, Clair L. Smith and Alphonso Knighton. Address 1607 Olive street, St. Louis.

The English Tool & Supply Co., Kansas City, Mo., has been chartered with a capital of $100,000 by Frank Uhrich, James Moran, Mary Mair, S. H. Hadley and Norton Beebe to sell engineering supplies, pipe, valves, fittings, etc.

The Pittsburg Chain & Forge Co., Paden City, W. Va., capital $50,000, has been chartered by A. E. Pearce, L. F. Cotter, A. M. Fuller, E. Rainbow and E. H. Flood, all of Pittsburg, Pa. The company will manufacture iron and steel products.

The Gas Engine Pneumatic Co., Plainfield, N. J., has filed articles of incorporation with a capital of $200,000. Those interested are: Peter J. Zegilo, Robert A. Meeker and William A. Newcorn. The company will manufacture gas engines and air compressors.

The American Saw Works, Hackettstown, N. J., capital $100,000, has been organized by William E. Swanger and Robert H. Richards, Hackettstown, N. J., and Edward A. Simmon, Brooklyn. The company will manufacture saws, railroad electric light and telephone equipment.

The Charles L. Crabb Co., Queens, N. Y., has been formed to manufacture machinery, tools, etc., by Louis Berger and Carl Berger, 300 St. Nicholas avenue, Queens, N. Y.; Charles L. Crabb, 3314 Clarendon avenue road, Brooklyn, and others. The company has a capital stock of $10,000.

With a capital of $100,000 the American Metal Seat Corporation, Brooklyn, N. Y., has been organized to manufacture metal seats, etc., by Joseph Vogel, 299 South Third street, Brooklyn; Max Kaufmann, 272 West 117th street; Paul Vandrann, 542 West 149th street, both of New York.

The Crescent Tool Co., Jamestown, N. Y., has filed articles of incorporation to manufacture hardware specialties, tools, etc. The capital stock of the company is $30,000, and the incorporators are: Karl Peterson, Albin Karlson, Charles F. Falldin, John E. Anderson and Charles S. Grover, all of the above address.

The Stratton Engine Co., Fitchburg, Mass., engines, boats and automobiles, has filed articles of incorporation with a capital of $1,000,000. The officers of the company are: President, Robert E. Erdman; treasurer, Samuel W. Beers; clerk, Thomas Dalton, all of the address given above.

The Deming Apparatus Co., New York, to manufacture machinery appliances, has been organized with a capitalization of $200,000 by E. W. Deming, 76 Pine street; John T. Condon, 68 William street, both of New York; W. D. Dater, Hawthorne, N. J.; M. S. Kattendorn, New Rochelle, N. Y.; and F. D. Peale, Summit, N. J.

The Clyde Iron Works of Maine has filed articles of incorporation in Minnesota with headquarters at Duluth. The company has a $600,000 authorized capital and among those interested are: C. A. Luster, J. R. McGiffert, Oscar Mitchell, W. D. Bailey and A. C. Gillette, all of Duluth; E. J. Pike, L. A. Ingalls, A. M. Currier, J. R. Currier, H. M. Heath and C. L. Andrews, all of Augusta, Me.

New Construction:—

The Turner Tanning Machinery Co., Peabody, Mass., is erecting a one-story concrete machine shop 80 x 100 feet.

The Falcon Bronze Co., Youngstown, O., is planning the erection of an addition to its plant in which will be installed two converting furnaces.

The Lockhart Iron & Steel Co., Pittsburg, is just finishing a new addition to its plant 65 x 150 feet, to be used for stock storage and warehouse.

George H. McKinley is preparing to erect a foundry adjoining his present plat at Moline, Ill. The addition will be 40 x 90 feet in dimensions.

James J. Lacy & Co., Baltimore, Md., have awarded the contract for the erection of an addition 16 x 87 feet to their iron foundry at Block

and Willis streets.

Charles H. Evert, formerly connected with the Wright Foundry Co., Duluth, Minn., has puchased a site in that city and will erect a modern machine shop and foundry.

The Draper Co., Hopedale, Mass., manufacturer of cotton machinery, has awarded to Dillon Bros., Milford, Mass., the contract for the construction of 38 frame two-family dwellings, estimated to cost $3,500 each.

The Earle Gear & Machine Co., Germantown, Pa., is planning the erection of a two-story machine shop 70 x 138 feet with columns, floors and roof construction of reinforced concrete. Architects Ballinger & Perrot, of Philadelphia, are in charge.

The addition which the Menefee Foundry Co., Ft. Wayne, Ind., manufacturer of brass and gray iron castings, is erecting to its foundry, will be devoted exclusively to molding work. The company states that at the present time it cannot give a statement of the equipment needed.

The contract for the construction of two large brick and steel factory buildings at the plant of the Union Metallic Cartridge Co., Bridgeport, Conn., has been awarded to Casper Ranger, 10 Bond street, Holyoke, Mass. The new structures will be 50 x 222 feet and 60 x 170 feet respectively.

The Page Woven Wire Fence Co., Monessen, Pa., has started work on a new 50-ton open-hearth furnace and within a short time will start on a second furnace of similar capacity. The company is doing its own construction work. At the present time this concern has two 15-ton Wellman open-hearth furnaces.

The United Iron Works Co. has awarded the contract for the construction of a new plant at Independence, Kas. There will be three main buildings and an office constructed of brick with dimensions as follows: Foundry, 70 x 125 feet; machine shop, 70 x 130 feet; pattern house, 50 x 120 feet, two stories, and office, 30 x 40 feet.

At the annual meeting of the stockholders of the Sharon Foundry Co. it was announced that a new open-hearth furnace would soon be installed and other improvements made to the company's plant at Wheatland, Pa. All the retiring directors were re-elected. In the choosing of officers W. W. Shilling was returned to the presidency and Thomas Kennedy was named as superintendent, secretary and treasurer.

The American Steel Scraper Co., Sidney, O., manufacturer of steel road scrapers, plows, wheelbarrows and pressed steel shapes, is rebuilding the portion of its plant which was destroyed by fire July 8. An adjustment of the insurance was secured three days after the conflagration and the clearing of the site immediately begun, permitting brick laying to be inaugurated on the 16th. Nearly all the machinery and supplies required for the new building have been purchased. The power plant, blacksmith shop and most of the heavy machinery of the company, which are not damaged, are now in operation.

The Lake Shore Engine Works, Marquette, Mich., has begun work upon a new and modern plant of iron and steel construction in that city, having acquired a large site advantageously located. The new plant will consist of the following buildings: Machine shop, 80 x 240 feet; foundry, 80 x 160 feet; smith shop, 40 x 130 feet; pattern shop, 40 x 60 feet; pattern storage house, 32 x 100 feet; power house, 32 x 60 feet, and in addition there will be an office building. A large sum will be expended for new equipment in the arrangment of the plant to permit of the greatest economy in the handling and finishing of materials.

General Industrial Notes:—

The Turbine Pump Co., Oak Harbor, O., recently organized, reports that it will have its stock manufactured under contract.

The Grand Rapids Foundry Co., Grand Rapids, Mich., has increased its capital stock from $25,000 to $50,000.

The Keystone Fence Co. and the Atlas Wire Co., Peoria, Ill., have been consolidated under the name of the Keystone Steel & Wire Co., with a capital of $500,000.

Stockholders of the Sweet Steel Co., Syracuse, N. Y., at their annual session elected the following directors. R. L. Ahles, J. W. Ahles, W. L. Wright, P. S. Dyer and Harold Luther Stevens, all of Williamsport, Pa.

The Lynchburg Mill Works, Lynchburg, Pa., a recent incorporation, has purchased a plant equipped for roll grinding, corrugating, etc., and is devoting its energies along these lines. The company is not in the market for any equipment or material at present.

The following directors will serve the Janesville Machine Co., Janesville, Wis., during the ensuing year, their selection having been made at the annual meeting: Levi B. Carle, T. O. Howe, M. G. Jeffris, J. G. Rexford, James Harris, S. C. Cobb, Dr. F. B. Farnsworth, Hiram Merrill and A. P. Lovejoy.

Stockholders of the Youngstown Sheet & Tube Co., Youngstown, O., at their annual meeting elected the following directors: J. A. Campbell, H. G. Dalton, John L. Severance, C. D. Hine, Robert Bentley, H. H. Stambaugh, E. L. Ford, William Wilkoff, George D. Wick, J. G. Butler Jr. and Richard Garlick. The officers will be elected later.

James Stevens was elected president of the Rome Merchant Iron Mill, Rome, N. Y., at the annual meeting of the trustees and stockholders. The other officers chosen are: S. B. Stevens, vice president, and Charles W. Lee, secretary and treasurer. The trustees named by the stockholders are: James Stevens, S. B. Stevens, C. W. Lee and Samuel Southall.

Kosegarten Bros., Nassau, N. Y., recently organized, will manufacture piano hardware for Grubb & Kosegarten Bros., manufacturers of piano actions. The concern has a building already equipped for this line of manufacture. The officers, who are also interested in Grubb & Kosegarten Bros., are as follows: O. F. Kosegarten, president; C. W. Kosegarten, vice president, and A. O. Kosegarten, secretary and treasurer.

The International Saw & Tool Co., a recent Columbus, O., corporation, has leased a building in that city and is now engaged in the manufacture of circular saws and the patent Krieger inserted saw tooth. The officers of the company are: Andrew Krieger, president; Philip Schlapp, vice president; A. M. Harris, secretary and treasurer. The board of directors is composed of the officers, Fred Siegel and Joseph Barnhard.

The Westinghouse Electric & Mfg. Co., Pittsburg, at the annual meeting of the stockholders elected William McConway as a director to fill the vacancy caused by the death of P. F. Cobbe. The other directors re-elected are as follows: Anthony N. Brady, N. W. Bumstead, George W. Hebard, E. M. Herr, Brayton Ives, T. W. Siemon, George C. Smith, Frank H. Taylor, W. D. Uptegraff, H. H. Westinghouse and George Westinghouse.

The E. T. Lippert Saw Co., Millvale, Pa., recently incorporated, reports that it will manufacture the same line of goods formerly produced by the E. T. Lippert Saw Mfg. Co., operating the Penn Saw Works at

Millvale, Pa., and the Pittsburg Saw Works at Pittsburg. The principal line will be circular saws. The company has its buildings equipped and no extensions are contemplated at this time. E. T. Lippert is president, F. J. Pfischner, secretary, and E. B. W. Pfischner, treasurer.

At the annual meeting of the stockholders of the Columbus Chain Co., Columbus, O., Chas. M. Wambaugh, I. B. Cameron, H. C. Park, H. P. Ford, Daniel V. Carroll and Scott A. Webb were elected directors. Charles M. Wambaugh was chosen president and treasurer; I. B. Cameron, vice president; Henry P. Ford, secretary, and Daniel Carroll, superintendent. The annual report showed that the year had been most prosperous, and the usual quarterly dividends on the preferred and common stocks of the company were declared payable Aug. 1.

The modern new plant of the Michigan Copper & Brass Co., Detroit, was formally placed in operation July 23. The equipment and arrangement of the new plant are pronounced to be among the best in the country. The officers are: George H. Barbour, president; James E. Danaher, first vice president; D. M. Ireland, second vice president; James T. Whitehead, secretary. The directors are: George H. Barbour, James E. Danaher, D. M. Ireland, James T. Whitehead, Henry B. Ledyard, Jeremiah Dwyer, F. T. Moran, Fred M. Alger and E. J. Corbett.

At the annual meeting of the directors of the Youngstown Foundry & Machine Co., Youngstown, O., W. J. Wallis, of Girard, O., was chosen president and general manager, succeeding Thomas Parrock, who declined re-election. The new president for several years past has acted in the capacity of vice-president and superintendent of the plant. The other officers chosen are: Secretary, B. G. Parker; treasurer, Frank A. Williams. The new board of directors consists of A. E. Adams, S. K. Hine, E. Hartzell, W. J. Wallis, Fred Andres, F. A. Williams and Thomas Parrock.

Trade Notes:—

The American Scrap Iron Co., Youngstown, O., has equipped its yard with a large shears, and with a railroad switch in its yard, is now capable of handling any amount of scrap.

The Southern Bridge Co., Joplin, Mo., has closed a contract for the steel buildings for the machine shop and foundry of the Bartlesville Foundry & Machine Works, Bartlesville, I. T. The company has also secured the contract for a 50,000-gallon tank and tower for Sayre, Okla.

The Waterman Car Wheel Co., Houston, Tex., has added a second Newten cupola to its equipment. The addition gives the company two Newten cupolas, one of 5 tons and the other of 10 tons hourly capacity. The Atlantic Coast Line Railway Co. has installed at its South Rocky Mount plant a 5-ton 3-motor electric Northern traveling crane, span about 72 feet. Both cupola and crane were furnished by the Northern Engineering Works, Detroit.

The American Refractories Co. has established its general sales office in the Commercial National Bank building, Chicago. Through this office the sales for their silica brick, as well as the fire brick of the Olive Hill Fire Brick Co. for the central west, will be made under the management of E. M. Allen, vice president and general manager of the American Refractories Co., and J. H. Cavender, sales agent of the same company, who will also be located at this office.

Fires:—

The foundry of the Lehigh Valley Co., Drifton, Pa., was damaged by fire July 17.

The Eagle Iron Works, Des Moines, Ia., sustained a small loss by fire recently.

The plant of the Raymond Skate Co., Charleston, Mass., was heavily damaged by fire July 18.

The Dighton Furnace Works, Taunton, Mass., lost several buildings by fire July 24. The loss is reported to be heavy.

The plant of the Bertelsen & Peterson Engineering Co., manufacturer of heavy and light machinery, Boston, Mass., suffered a heavy loss from fire July 20.

The plant of the Aremac Mfg. Co., manufacturer of dies, tools, etc., Peoria, Ill., was damaged to the extent of $2,000 by fire of an unknown origin July 17.

The Penn Bridge Co., which has under construction a bridge in Washington, D. C., has been obliged to pay fines aggregating $1,500 in the police court of that city for violating the eight-hour law, of which they were convicted several months ago in three separate cases. The conviction was later sustained by the district court of appeals.

FOREIGN TRADE OPPORTUNITIES.

(These inquiries from prospective foreign purchasers are furnished by American consuls to the Government Bureau of Manufactures, Department of Commerce and Labor. Those in which the addresses are omitted are on file at the Bureau of Manufacures, Washington, D. C. In applying for addresses refer to the file number.)

No. 1180. Refrigerating machines, etc.—Vincente Mattei Colon, Ponce, P. R., writes that there is great industrial activity in Porto Rico, and desires to correspond with manufacturers of equipment, machinery and improved mechanical appliances.

No. 1207. Turbines.—The board of managers for the waterworks of a foreign government has called for tenders for delivery of four turbines of 10,000 horsepower each, with necessary regulators, etc. The turbines should be delivered mounted and fully finished not later than Sept. 1, 1909. The tenders or bids should be delivered before Sept. 15, 1907. Blueprints of the power plant are on file at the Bureau of Manufactures.

No. 1182. Agricultural implements and military equipment.—An American consular officer in the Orient desires to have on file in his office catalogs, illustrated if possible, of small ice-making machines and all classes of military equipment, including rifles, pistols, belts, swords, saddles, harness, and artillery. He also states that it would be desirable to have on exhibition to assist in making sales samples of American agricultural implements, particularly cheap plows, harrows, cultivators, mowers, reapers, binders, shovels, forks, etc.

No. 1184. Flour-milling machinery.—An American consul in Europe desires to receive catalogs of American manufacturers with estimated cost of fitting out small plants for manufacturing flour. The consul also adds that an important firm in the city in which he is located will probably put in a new plant at an early date.

No. 1186. Motors.—The London *Times* states that the Russian Roads and Transports Department at St. Petersburg contemplates the establishment of direct motor service between Novorossiisk and Soukhoum. Particulars from Ministere des Voies and des Communications, St. Petersburg, Russia.

No. 1187. Machinery—The Servian Maintenance Branch of the War Office at Bucharest will shortly purchase seven new steam engines and also electric machinery for lighting and power transmission. Five petroleum reservoirs and six wheel silos of 38,000 tons capacity each will shortly be constructed at Constantza. Address the above office at Bucharest, Servia.

No. 1192. Hydraulic cranes.—The Harbor Trust, Swansea, Wales, desires two hydraulic fixed cranes (50 tons and 70 tons), full load; at maximum radius of 60 feet, jib-range maximum 60 feet, to minimum of 45 feet, lift range 90 feet to 60 feet above and 30 feet below level of coping; also hydraulic lifting, slewing and derricking gear. Particulars from Trustees' Engineer, Harbor Offices, Swansea.

No. 1198. Railway bridges.—An American consular officer advises that bids will be received until September 30, 1907, by an official of a South American city for the construction of five railroad bridges. Plans and specifications for these bridges can be obtained from the official in question.

No. 1202. Pumping machinery.—The *Pioneer Mail* states that Mr. E. Ault, Special Engineer, Rangoon Municipality, India, has submitted proposals recommending improvements for increasing the pumping power for raising water. These include two sets of pumping engines capable of raising 10,000 gallons per minute, and also a dam and pipe line. The estimated cost of the proposals amounts to nearly $864,000.

No. 1218. Rock crushing and street-rolling machinery.—An American consular officer reports that a municipality in western Asia is preparing the streets for the installation of a new electric tramway service, and stands in need of rock crushing and street-rolling machinery. He also furnishes the name of the official to whom correspondence should be addressed.

No. 1220. Locomotives.—The French Journal Official publishes a decree authorizing the Tunisian government to purchase from abroad 38 locomotives for the narrow-gage railways of the country.